EXPERIENTIAL PEDAGOGY AND ITS LINKS TO INNOVATIVE ENTREPRENEURSHIP: EVALUATING COMPULSORY ENTREPRENEURSHIP EDUCATION IN NIGERIA

VICTOR UDEOZOR
M.Sc. - Entrepreneurship
B.Sc. - Industrial Chemistry



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Management Division
Nottingham University Business School
University of Nottingham

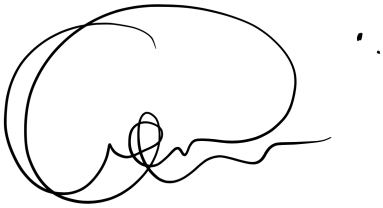
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DECLARATION

I, Victor Chukwuemeka Udeozor, declare that I am the legitimate author of this thesis and it has been the result of my own work which has been mainly undertaken during my period of registration for this degree at the University of Nottingham. This thesis has not been submitted in any previous application for any degree.

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Victor Udeozor

PUBLICATIONS

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to Innovate and The Role of Experiential Pedagogy: A Study of Nigeria Higher Education. *In: Proceedings of 4th Biennial Conference of the Africa Academy of Management.(2018).* (Accessed on 10/14/2018). Africa Academy of Management. *url: http://programme.exordo.com/afam2018/delegates/presentation/97/.*

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This thesis is dedicated to God.
And to my wife Grace and our three beautiful children.

— Chukwuebuka, Nduchukwu & Naraekele

ABSTRACT

As yet, knowledge of how entrepreneurship education influences innovative entrepreneurs is limited. Examination of extant knowledge on innovative entrepreneurship reveals two specific critical aspects. First, the effect of contextual factors on the innovative intentions is fragmented and evidence from a resource constraint environment is sparse. Besides resource constraint, contextual factors of interest here include whether an entrepreneurship course is compulsory, or whether a university is public or private. Second, the role of experiential pedagogy in the development of innovative capabilities is not fully understood. Even if we accept as valid the utility of experiential pedagogy regarding innovation capabilities, what constitutes experiential pedagogy is not commonly agreed upon. The main objective of this thesis, therefore, is to explore experiential pedagogy and its links to innovative entrepreneurship in a resource constrained environment.

Three articles have been developed to address this objective. Article 1, examines the links between experiential pedagogy and innovative entrepreneurship. This article is based on a qualitative research approach and uses a single case-study of a private university. The findings are a set of propositions stating that experiential pedagogical methods will raise innovative aspirations and that the stronger the experiential pedagogy, the stronger the impact on innovative aspirations. The propositions in Article 1 are the basis for the hypotheses in Article 2.

Article 2 uses a quantitative research approach and a pretest-posttest research design to examine the impact of compulsory entrepreneurship courses and the effects of experiential pedagogy —constructed as out-of-class experiences and engaged-faculty — on innovative intentions

and entrepreneurial intentions across public and private universities. The results indicate that (a) out-of-class experience significantly increases intentions to innovate; (b) behavioral control mediates the relationship between out-of-class experiences and changes in intention to innovate; (c) university type – public or private – has no direct significant effect on the students' intention to innovate.

Building on the findings of Articles 1 and 2, Article 3 presents a pedagogy typology that is grounded on experiential learning theory.

This thesis makes two novel theoretical contributions: a) it contributes to entrepreneurship education theory by providing evidence of the decisive role of experiential pedagogy in the development of innovative intentions which is a precursor to innovative entrepreneurship. Specifically, it contributes to the field of innovative entrepreneurship with the knowledge that perceived behavioral control is an important precursor of innovative intention which is a predictor of innovative entrepreneurship; b) by proposing a novel pedagogy typology, the thesis contributes to the understanding of the nuanced effects of pedagogy in entrepreneurship education. Finally, the thesis has practical implications for policymakers and entrepreneurship educators.

KEYWORDS: innovative entrepreneurship, intention, pedagogy typology, experiential learning, mixed methods research, education policy.

The race is not to the swift, nor the battle to the strong,
nor bread to the wise, nor riches to the intelligent,
nor favor to those with knowledge,
but time and chance happen to them all.

— Ecclesiastes 9:11

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ACRONYMS

BSNN Business School Netherlands Nigeria

CMV Common Method Variance

EDC Entrepreneurship Development Centre

EE Entrepreneurship Education

EFA Exploratory Factor Analysis

ELT Experiential Learning Theory

HEI Higher Education and Institution

LBS Lagos Business School

MSBN Metropolitan School of Business and Management

NUC National Universities Commission

SEM Structural equation modeling

TPB Theory of Planned Behaviour

Part I

RESEARCH PROBLEM, EMPIRICAL CONTEXT, AND METHODOLOGY

Research begins with identifying a problem, defining relevant terms and identifying an ideal research setting & methodology. Part I addresses these issues. It comprises three chapters that set the foundation for this thesis. Chapter one introduces the research problem, research questions to be investigated and potential contributions. Chapter two is a review of the debates on the purpose and outcome of entrepreneurship education. The chapter states the definition of entrepreneurship education and ends with a discussion of the research agenda regarding innovative entrepreneurship. Chapter three examines the research methodology adopted for this thesis as well as the justifications.

1

INTRODUCTION

1.1 BACKGROUND

Since Birch's (1979) finding that small firms are generators of jobs and economic growth in the United States, entrepreneurship has become fashionable globally. Promoting graduate and youth entrepreneurship is a key issue on many policy agendas in both developing and developed economies (Birch 1979; McMullan and Long 1987). Some emerging economies across Africa with high levels of youth unemployment have turned to policies on Entrepreneurship Education (EE)[1] to stimulate entrepreneurial activities. In Nigeria, for example, the Federal Government launched the policy of compulsory courses[2] in entrepreneurship for all students across public and private universities since the 2007/2008 academic session (Olorundare and Kayode 2014; Akpan, Effiong, and Ele 2012; Adejimola and Olufunmilayo 2009; Dakung et al. 2017). One main reason for this policy is to encourage graduate entrepreneurial activities which may lead to job creation and economic growth (Arogundade 2011; Olorundare and

1 Entrepreneurship education is defined as *any pedagogical process that involves the creation of knowledge about how, by whom and with what effects opportunities to create or replicate value are discovered or created, evaluated, and exploited.* See Chapter 2, Section Section §2.4.

2 Compulsory courses are units of teaching either during school or after school that students have [*to take*] but did not freely elect to take; "it is training required to complete or graduate from a particular university course [*for which participants may not have been interested in*]" (Martinez et al. 2010, author's additional words in italics). Compulsory courses must be completed before graduation. In other words, students must dedicate a portion of their time to participate in EE before graduation.
The term course refers to a unit of teaching for a subject that lasts over an academic term. In the UK and Australia, this is referred to as module or unit.

Kayode 2014). Besides Nigeria, other emerging countries in Africa such as Ghana, Botswana, Uganda and Kenya have implemented similar compulsory courses in entrepreneurship (Farstad 2002). These emerging economies, in comparison with developed economies, tend to experience high levels of resource constraints and cuts to education budget. Resource constraints, as Farstad (2002) argues, can affect entrepreneurial activities. Examples of constraints that can affect entrepreneurship include difficulty in accessing loans and finance, lack of infrastructure, and low access to technology. Besides resource constraints that can affect entrepreneurial activities, cuts in education budget can raise financial constraints for universities particularly public institutions. The implication is that resource constraints and education budget cuts can influence the way entrepreneurship is taught in public universities. The two factors stated above along with the policy of compulsory course in entrepreneurship arguably make emerging context "interesting" research settings for studying entrepreneurship education.

The logic of entrepreneurship education is that it can stimulate entrepreneurial intention[3] and innovative capabilities[4], as well as enhance proactive behaviors towards opportunities which may lead to new ventures and job creation (Greene, Katz, and Johannisson 2004).

However, the link between EE and entrepreneurial activities is complicated and not well established in the entrepreneurship education literature (Souitaris, Zerbinati, and Al-Laham 2007; Bird 1988; Kolvereid 1996b). One reason for this complication is that entrepreneurial activities related to venture creation are highly affected by resource constraints; because resource constraints can be preventive to both motivation and actual entrepreneurial behavior (Farstad 2002).

3 An individual's resolution to consciously plan to start a business

4 Such as the capacity to identify innovative opportunities, develop innovative intentions and run new businesses that drive innovations (IPP 2018).

Another reason for the complication is that scholars do not commonly agree that the purpose of entrepreneurship education is to support value creation through entrepreneurial behavior (behavioral approach). Some scholars argue that the purpose of entrepreneurship should be to expose students to the concept of entrepreneurship and develop some skills that can be applied in any context (trait approach). The lack of consensus on the purpose of EE has implications for assessing its outcomes. Even if we accept entrepreneurial behavior as the purpose of EE, Block, Fisch, and Van Praag (2017) argue that innovative entrepreneurship[5] — creation of enterprises that offer new products, or new production processes and enter new markets — should be distinguished from replicative entrepreneurship[6] - copying things and doing them better (Baumol, Litan, and Schramm 2007a; Baumol, Litan, and Schramm 2007b; Baumol, Schilling, and Wolff 2009; Kuratko 2005). Some scholars (for example, Baumol, Schilling, and Wolff (2009) and Kuratko (2005)) posit innovative entrepreneurship as a potent economic force that may lead to creation of enterprises that offer new products, or new production processes and enter new markets (Baumol, Schilling, and Wolff 2009; Kuratko 2005).

Assuming this position of the import of innovative entrepreneurship, exploring the relationship between entrepreneurship education and innovative entrepreneurship within Higher education is arguably an important research agenda. However, as of yet, our knowledge in this area is limited.

First, whereas education has been linked to innovation capabilities (Marvel and Lumpkin 2007), how innovative entrepreneurs[7] — those

5 See Section §2.6 for more detailed discussion on innovative entrepreneurship

6 The arguments for replicative entrepreneurship are well documented in literature. For example, Lin (2011) suggests that replicative entrepreneurship could be useful for developing economies to 'catch-up' with developed economies (for example, China's development model since 1978). But it is not the focus of this thesis.

7 For this study, innovation is an economic or social rather than a technical term. This means that the term innovative entrepreneurship is not limited to creation of new products processes or services, but also creating new markets for products,

who commercialize inventions, *create* new products, processes and services, or transmute value of products and services (Baumol 2010) — should be taught has not been fully explored. In particular, how innovative intention (an individual's resolution to consciously plan to do new things) can be cultivated in Business Schools is poorly understood (Baumol, Schilling, and Wolff 2009; Rasmussen and Sørheim 2006; Arranz et al. 2017). Scholars are interested in understanding how business schools, generally, and entrepreneurship education, specifically inspire innovative entrepreneurs (Muñoz, Guerra, and Mosey 2019; McClure 2016). Along this line of nurturing innovation, some Business Schools in the West have made innovation a central rather than peripheral focus of entrepreneurship education (Mayhew et al. 2016). However, as at yet, the link between pedagogy and innovative entrepreneurship remains under-explored.

Specifically, the antecedents of innovative entrepreneurship are poorly understood. A synthesis of relevant literature suggest that there two critical factors that may affect the antecedents of innovative entrepreneurship: a) the effects of contextual factors — such as when an entrepreneurship course is compulsory, or whether a university is public or private — on the innovative intentions of students is fragmented; Specifically, evidence from a resource constraint environment is sparse; b) the role of experiential pedagogy[8] — teaching methods consistent with experiential learning theory — in the development of innovative intentions is not fully understood. How experiential peda-

processes and services; changing the yield of resources; or as changing the value and satisfaction obtained from resources by the consumer (adapted from Drucker 1985, p. 33). Innovative entrepreneurs purposefully search for changes, and in the systematic analysis of the opportunities such changes might offer for economic or social innovation (Drucker 1985, p. 35). *Innovative entrepreneurs, through the Schumpeterian process of "creative destruction" initiate waves of technological change and innovation stimulating economic growth. Creative destruction refers to the market entry of new firms with the potential to displace obsolescent firms.*

8 Grounded on the experiential learning theory (Kolb 1984), this thesis defines experiential pedagogy as teaching practices that engage students within and beyond the classroom to learn by action and reflection in order to draw conclusions on alternative ways to act differently. See 6.4 for details on this definition.

gogy is associated with innovative entrepreneurship remains an area of active debate. Arguably, an empirical study on the effects of the use of experiential pedagogy in EE and contextual factors on innovative capabilities in a resource constrained environment may increase our understanding of the antecedents of innovative entrepreneurship.

Second, even if we accept as valid the utility of experiential pedagogy regarding innovation capabilities, the reasons why it "works" still remains shaded in "mystery." In other words, the logic of experientially based teaching methods in entrepreneurship education has not been adequately explained. For example, innovative aspirations or intentions have not been explicitly and systematically linked to experientially-based teaching methods. In short, what constitutes experiential pedagogy is not consistently defined nor commonly agreed upon. Unpacking the concept of experiential pedagogy may contribute to an understanding of why it "works."

These two "research gaps" form the rationale for this thesis. The main argument of the thesis is that the failure to unpack experiential pedagogy and explore its ties to innovative aspirations limits our understanding of the antecedents of innovative entrepreneurship. This failure also limits our collective understanding of how business schools in general and entrepreneurship education, in particular, can nurture innovative entrepreneurs.

Therefore, the ***main objective of this thesis is to explore experiential pedagogy and its links to innovative entrepreneurship.***

In line with the research gap and main research objective stated above, this thesis will address the following research questions: 1) How does pedagogy relate to innovative entrepreneurship in a resource-constrained environment? 2) Can experiential pedagogy influence intent to innovate? 3) How is experiential pedagogy constructed?

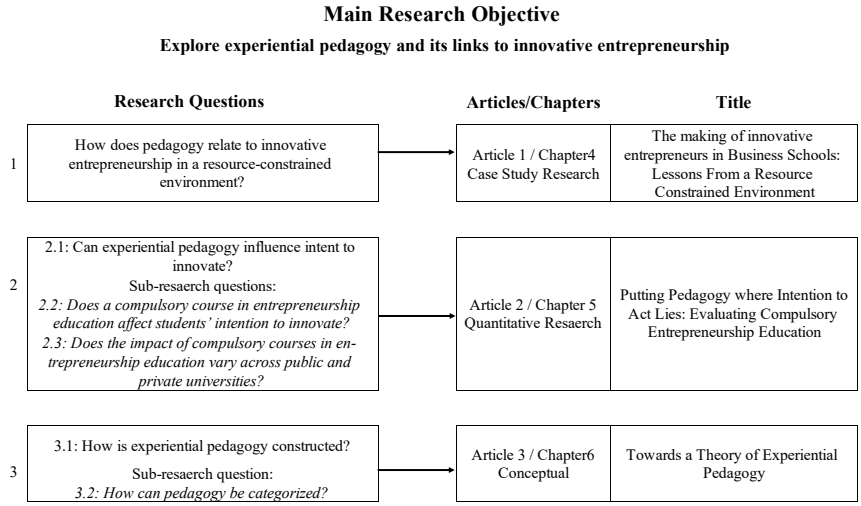


Figure 1.1: Link Between Research Questions and Articles

Research questions 1 and 2 are related to the first "research gap" while research question 3 is related to the second "research gap."

Each of these three research questions is addressed in three articles as Figure 1.1 shows. The first article, using a qualitative research approach, shall explore the ties between experiential pedagogy and innovative aspirations. The findings shall be reported are a set of propositions explaining the links between experiential pedagogical methods and innovative aspirations. Article two, using the theory of planned behavior and quantitative research approach will test a set of hypotheses on the relationship between experiential pedagogy and innovative aspirations across public and private universities. In doing so, the set of mediators that elucidate the antecedents of innovative entrepreneurship can be unpicked. Building on the findings of articles 1 and 2, article 3 shall develop a parsimonious pedagogy typology that may help understand experiential pedagogy in a more systematic way.

1.2 RELEVANCE AND CONTRIBUTION

This thesis contributes to entrepreneurship education theory by shedding light on the effects of contextual factors (such as compulsory element of course in entrepreneurship and university-type — public or private) and pedagogical methods (Nabi et al. 2017) on intention to innovate —a novel impact indicator— and entrepreneurial intention. Although there is great scholarly and policy interest in entrepreneurship education, the evidence examining its effects is equivocal. The reasons for the equivocal evidence are complex. It is not clear whether there are pedagogical methods whose effects transcend context or whether there are contextual factors whose effects are constant regardless of pedagogical methods. This thesis contributes new perspectives on equivocal evidence examining the effects of compulsory entrepreneurship courses by exploring contextual factors and pedagogical practices in a single study.

Besides the contextual factors noted above, this thesis also contributes to entrepreneurship education theory by providing evidence of two contextual influences common in Nigeria/Sub-Saharan Africa: resource constraints and education budget cuts. Scholars such as Nkomo (2015) and George (2015) call for more studies of entrepreneurship education in Africa settings to advance knowledge about the merits of entrepreneurship education. Similarly, Johns (2006) argues that management researchers should highlight the effects of context in their studies. In response, this thesis focuses on Nigeria's Higher Education and Institutions to investigate entrepreneurship education. By examining entrepreneurship education within the Nigeria/Sub-Saharan Africa context, this thesis contributes to knowledge about how Business Schools may contextualize entrepreneurship education to compensate for constraints in the environment.

Second, the study contributes to the experiential learning theory. The ethos of experiential learning is that *learning by doing* is the best way to learn (Kolb 1984; Kolb, Boyatzis, and Mainemelis 2001; Dewey and Small 1897). Scholars maintain that learning should be active and practical not just passive and theoretical (Neck and Greene 2011; Neck, Greene, and Brush 2014; Rasmussen and Sørheim 2006; Rauch and Hulsink 2015; Gielnik et al. 2015) to promote higher learning outcomes. Pedagogical methods consistent with such an approach to learning are engaging and give students more opportunities for action(s) and reflection which promote innovative outcomes. This thesis provides evidence that may shed light on this argument.

Third, the thesis contributes to the understanding of the nuances of pedagogy in entrepreneurship education by proposing a novel pedagogy typology. Although scholars implicitly agree that some pedagogical methods are more experiential than others and suggest that experiential pedagogical methods can have a high impact on students learning and retention (Mayhew et al. 2012), there is no systematic categorization framework for pedagogy. The lack of such a framework creates confusion about which pedagogy is experiential and which is not. This thesis provides some clarity on this matter with a novel pedagogy typology that is consistent with the experiential learning theory.

Fourth, this study contributes to the field of innovative entrepreneurship. Although advocates of innovative entrepreneurship argue that innovative entrepreneurs — those who focus on the introduction and acceptance of new products and new production methods — can create disruptions that sustain economic growth (Baumol, Schilling, and Wolff 2009), the antecedents of innovative entrepreneurship are poorly understood. One of the antecedents argued in this thesis is intention to innovate. Assessing how EE can influence this antecedent may increase

our understanding of how to train innovative entrepreneurs. Therefore, by providing evidence examining the influence of certain pedagogical methods on intention to innovate, this study makes valuable contributions to the conversation about how innovative entrepreneurs can be taught. It also adds to growing knowledge about the role of higher education in cultivating innovative entrepreneurship.

Fifth, this research, at the time of writing, is the first to use the theory of planned behavior to examine the effects of *compulsory* entrepreneurship education on intention to innovate — a novel impact indicator — across public and private universities. Thus, this thesis contributes to the theory of planned behavior by demonstrating that the theory can also explain the intent to innovate in a developing country context. The set of mediators for intention to innovate may elucidate the antecedents of innovative entrepreneurship (Davidsson 2007; Gielnik et al. 2015).

Finally, the thesis contributes to the practice of entrepreneurship education by evaluating the effects of a compulsory entrepreneurship course and providing empirical evidence of pedagogical practices that may support innovative intentions. Although there is considerable policy interest in entrepreneurship education (logic behind policies and belief in the value of EE is that it will support intention to innovate which may lead to entrepreneurial activities regarding new products, services, and processes), policymakers are interested to find out whether EE generates intended effects (Graevenitz, Harhoff, and Weber 2010) and whether those effects are consistent across public and private universities. Moreover, educators are confronted with the question of how to train innovative entrepreneurs. This thesis may provide evidence of pedagogical practices that may be relevant for training innovative entrepreneurs. For example, a piece of evidence in support of a correlation between experiential pedagogy and innovative

intentions will be invaluable for policymakers and educators to invest in promoting experiential pedagogy.

1.3 THESIS PLAN - OVERVIEW OF THE FOLLOWING ARTICLES

This thesis adopts the compilation of research articles structure (Paltridge 2002) comprising three articles exploring important aspects of experiential pedagogy and its links to innovative entrepreneurship. To achieve the overarching objective of this thesis, the following as-yet unanswered questions are addressed:

RQ1: How does pedagogy relate to innovative entrepreneurship in a resource constrained-environment?

RQ2: Can experiential pedagogy influence intent to innovate?

RQ3 How is experiential pedagogy constructed?

This thesis is devoted to answering the questions above in three different but related articles as Figure 1.1 shows.

Before addressing these RQs, the thesis presents an extensive review of literature (Chapter 2) that reveals the lack of consensus in the way scholars view the purpose and outcome of entrepreneurship education. The review shows that the three main schools of thought that underpin the purpose of EE are trait approach, behavioral approach, and new perspectives. Delineating pedagogical implications of the three schools of thought on the purpose of EE and the import of innovative entrepreneurship sets the stage for examining the links between pedagogy and innovative entrepreneurship. Following the literature review in Chapter 2, Chapter 3 lays out the philosophical considerations and justification for using mixed methods research. The general outline of the thesis in shown in Figure 1.2.

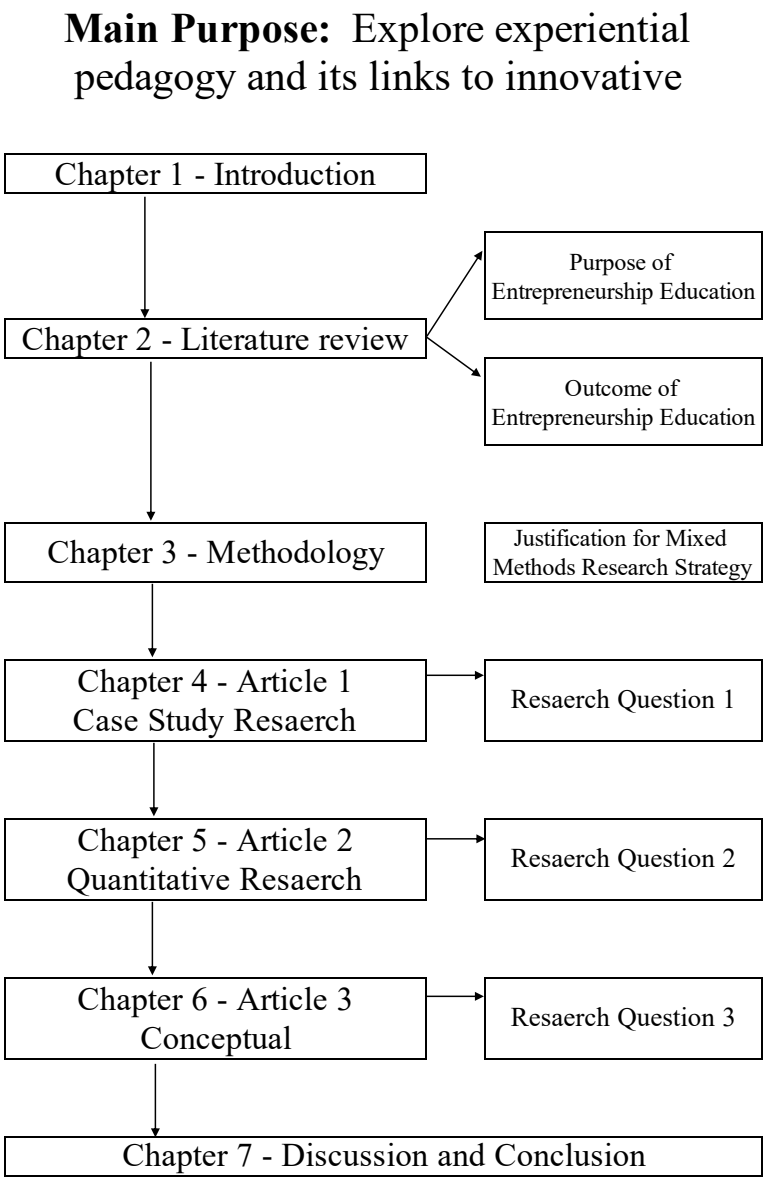


Figure 1.2: Outline of the Thesis

Article 1 Addresses RQ1 - Qualitative Research

> RQ1: How does pedagogy relate to innovative entrepreneurship in a resource constrained-environment?

Based on a qualitative research approach and using a single case-study method of a private university Article 1 examines the links between experiential pedagogy and innovative entrepreneurship. The article provides evidence that experiential pedagogy can support innovative aspirations and innovative entrepreneurship. The findings are a set of propositions explaining the links between experiential pedagogical methods and innovative aspirations. They show that using experiential pedagogical methods in entrepreneurship education can stimulate innovation learning outcomes. Specifically, student business startups and the use of practitioners strongly inspires students attitude and affinity for innovative entrepreneurship. The propositions in article 1 are the basis for hypothesizes in Article 2 that experiential pedagogy (engaged-faculty and out-of-class experiences) will raise innovative aspirations and that the stronger the experiential pedagogy, the stronger the impact on innovative aspirations.

Article 2 Addresses RQ2 - Quantitative Research Approach

> RQ2.1: Can experiential pedagogy influence intent to innovate?
>
> RQ2.2: Does a compulsory course in entrepreneurship education affect students' intention to innovate?

RQ2.3: Does the impact of compulsory courses in entrepreneurship education vary across public and private universities?

To test the generalizability of the propositions, Article 2 uses a quantitative research approach to examine the impact of compulsory entrepreneurship courses and the effects of out-of-class experiences and engaged-faculty — constructs of experiential pedagogy, on entrepreneurial intentions and intention to innovate across public and private universities. The article builds on the theory of planned behavior and the entrepreneurship education literature (Ajzen 1985; Mayhew et al. 2012; Rasmussen and Sørheim 2006; Honig 2004; Souitaris, Zerbinati, and Al-Laham 2007) to develop a theoretical model. The theoretical model indicates the postulations on the manner in which attitude towards entrepreneurship -ATA and perceived behavioral control - PBC mediate the effect of experiential pedagogy (engaged-faculty and out-of-class experiences) and university-type (public versus private) on intent to innovate and entrepreneurial intention. It also draws on the work of Mayhew et al. (2012) to assess intention to innovate as a precursor to innovative entrepreneurship. Identifying the mediators of intention to innovate may elucidate the antecedents of innovative entrepreneurship (Davidsson 2007; Gielnik et al. 2015). Before data collection, a pilot study was conducted to ensure clarity and face validity of constructs. Both at pretest and posttest, the questionnaire measured entrepreneurial intention, intention to innovate, attitude, perceived behavioral control, out-of-class experiences, and engaged faculty. Out-of-class experiences and engaged-faculty are constructs of experiential pedagogy. Based on pretest-posttest research design and using structural equation modeling on 361 a survey of randomly selected students, the results show that (a) out-of-class experiences sig-

nificantly increases intentions to innovate; (b) regardless of university type, out-of-class experiences and engaged faculty generate positive behavioral control and attitude towards entrepreneurship; (c) behavioral control mediates the relationship between out-of-class experiences and changes in intention to innovate; (d) university type – public or private – has no direct significant effect on the students intention to innovate. Unpicking behavioral control as a mediator is significant because it explains the antecedents of innovative entrepreneurship.

Article 3 Addresses RQ3 - Conceptual Paper

RQ3.1: How is experiential pedagogy constructed?

RQ3.2: How can pedagogy be categorized?

Building on the findings of Article 1 and Article 2, Article 3 presents a parsimonious pedagogy typology that is grounded on the experiential learning theory. Broadly, all teaching methods, as will be argued, fall on a spectrum from traditional to transformative pedagogy based on how consistent they are with experiential learning theory. Specifically, distinctions will be drawn between traditional, transitional and transformative pedagogy. The robustness of the scale is tested using criteria that have been proposed for evaluating classificational schemata. The typology contributes to a deeper understanding of experiential pedagogy.

Conclusions Chapter

The general results, key contributions, implications, strengths, and limitations of these four articles are summarized in a separate (final) chapter which concludes this thesis. The concluding chapter also offers a final discussion on the correlation between experiential pedagogy and innovative intentions as well as the import of identifying mediators of the relationship between experiential pedagogy and intentions for innovative entrepreneurship. It also discusses several avenues for future research.

As Figure 1.2 shows, following the introduction, the remainder of the thesis is organized as follows: Chapter two is a Literature review on the purpose and outcome of entrepreneurship education, Chapter three is a Methodology Chapter that discusses the overall philosophical considerations and research design for the thesis. The fourth, fifth and sixth chapters contain each of the articles/papers in this thesis. Chapter 7 summarizes the main findings and offers remarks pertaining to the main research questions/objectives. The Chapter also offers suggestions for future research.

2

LITERATURE REVIEW - THE PURPOSE OF ENTREPRENEURSHIP EDUCATION

Abstract

Research in entrepreneurship education has made considerable progress towards understanding the phenomenon of entrepreneurship. However, a review of entrepreneurship education literature highlights two issues that are considered critical and discussed in this Chapter. First, there is a lack of consensus on the definition and purpose of entrepreneurship education. Three schools of thought underpinning the purpose of entrepreneurship education that emerged are trait approach, behavioral approach and new frontiers. Second, how higher education influences innovative entrepreneurship is poorly understood. In particular, whether experiential pedagogy —teaching practices that are consistent with experiential learning theory — is associated with innovative entrepreneurship remains an area of active debate. By defining entrepreneurship education as pedagogical processes that promote the evaluation and exploitation of opportunities for creating or replicating value, this article sets the foundation for linking pedagogical methods and innovative or replicative entrepreneurship.

2.1 INTRODUCTION

Research in entrepreneurship education has made considerable progress towards understanding the phenomenon of entrepreneurship (Solomon, Duffy, and Tarabishy 2002). Fortunately, the debate in literature has advanced from "can entrepreneurship be taught" (Gorman, Hanlon, and King 1997) to "what is the best way of teaching entrepreneur-

ship" (Mayhew et al. 2012). By expounding the understanding of the antecedents of entrepreneurship such as discovery of opportunity (Muñoz C, Mosey, and Binks 2011; DeTienne and Chandler 2004) and development of entrepreneurial intention (Arranz et al. 2017; Bae et al. 2014; Davidsson 1995; Fayolle and Gailly 2015; Krueger and Carsrud 1993; Liñán 2004; Nabi et al. 2018; Nowiński et al. 2017; Rauch and Hulsink 2015; Souitaris, Zerbinati, and Al-Laham 2007; Oosterbeek, Praag, and Ijsselstein 2010), predicting entrepreneurship is now more possible (Gielnik et al. 2015; Rauch and Hulsink 2015; Lüthje and Franke 2003; Kolvereid 1996a; Bird 1988).

However, this purported progress seems fragmented by the elusiveness of a consensus on the definition, purpose and expected outcome of entrepreneurship education (Mwasalwiba 2010). Synthesizing the fast-growing body of empirical research and reviews on the purpose and expectations of EE suggests three main issues. First, there is a confusing application of multiple terms describing the same phenomenon, for example, 'entrepreneurship-education', 'enterprise-education' and entrepreneurial-education (Pittaway and Cope 2007; Mwasalwiba 2010). This confusing application of terms adds to the seeming fragmentation of progress towards understanding the phenomenon of entrepreneurship. It requires clarification and unification to advance the debate in literature (Mwasalwiba 2010).

Second, there is a lack of consensus in the purpose of EE is due in part to the heterogeneous provenance of entrepreneurship as a subject. Entrepreneurship as a subject draws from multiple disciplines including Economics, Finance, Business and Management, Sociology, Law, Politics and Anthropology (Frese and Gielnik 2014; Parker 2004). Moreover, some scholars argue for a broad view of EE that focuses on skills and cognitive outcomes (Gibb 1987; Fayolle, Gailly, and Lassas-Clerc 2006a; Kirby 2004) while others argue for a narrow view of EE

that focuses on behavioral outcome rather than skill and cognitive outcome (Gartner, Bird, and Starr 1992; Gartner 1988; Moberg, Stenberg, and Vestergaard 2012; McMullan and Long 1987). A review of the debates is necessary to precisely delineate the purpose EE for future research agenda.

Third, advocates of innovative entrepreneurship (Baumol, Schilling, and Wolff 2009; Baumol 2004; Mayhew et al. 2012; Cheung 2014; Baumol, Litan, and Schramm 2007b) argue that education is linked to innovation. For this reason, scholars are interested to understand how higher education influences innovative entrepreneurship. A comprehensive review of literature is relevant to synthesize the extant knowledge of how higher education may influence innovative entrepreneurship and highlight some research agenda.

Therefore this chapter is important in the following ways. First, following a thorough examination of the existing entrepreneurship education literature, the chapter proposes a unified definition of entrepreneurship education that is consistent with the agenda of this thesis. It focuses on the schools of thought underpinning the definitions and purpose of EE and the pedagogical methods that support them. In addition, it contributes to the innovative entrepreneurship literature by laying the foundations for the link between innovative entrepreneurship and pedagogy. By this, the chapter sets the stage for empirically exploring the links between innovative entrepreneurship and pedagogy.

2.2 CONFLICTING TERMS: TOWARDS UNIFIED TERMINOLOGY

There are contextual and conceptual reasons for the proliferation of terms found in the literature (Mwasalwiba 2010). The three commonly used terms are *entrepreneurship education*, *enterprise education* and *en-*

trepreneurial education. At the contextual level, different terms are used in different geographical contexts. The term '*entrepreneurship education*' is used in the United States and Canada for describing education for entrepreneurship whereas the term *enterprise education* is used in the United Kingdom and Ireland for the same purpose (Gibb 1993). In Sweden and the Balkans, the term *entrepreneurial learning* is often used to replace enterprise-education (Heder, Ljubic, and Nola 2011; Falk-Lundqvist et al. 2011). And in Finland, *internal entrepreneurship in education* is used to describe learning to become entrepreneurial while *external entrepreneurship in education* relates to understanding entrepreneurship and becoming an entrepreneur (Seikkula-Leino et al. 2010).

At the conceptual level, the problem of proliferation of terms and the resulting confusion in literature is further complicated. Different terms represent different conceptualization of the purpose of entrepreneurship education by scholars with diverse intellectual persuasions. For instance, *enterprise-education* and *internal entrepreneurship in education* are viewed as education *about* entrepreneurship. Such education focuses broadly on the development of skills, abilities mindset such as opportunity-seeking and generally influencing students' perceptions of entrepreneurship. Whereas *entrepreneurship education* and *external entrepreneurship in education* are viewed as education *for* entrepreneurship. Such education focusses *narrowly* on venture creation and self-employment (Erkkilä 2000; Garavan and O Ćinneide 1994).

The term *entrepreneurial learning* is used to describe the continuous process by which entrepreneurs acquire knowledge for being effective in starting up and managing new ventures either by direct observation of, or participation in, events associated with new venture creation. In other words, entrepreneurial learning relates to "an experiential process where the personal experience of [a practicing] entrepreneur is

transformed into knowledge" (Politis 2005, p. 407). Similarly, in corporate entrepreneurship literature, *internal entrepreneurship in education* is used as a synonym of *intrapreneurship in education* - learning about entrepreneurial acts within established firms (Burgelman 1983).

Regardless of the term, a common implicit objective of most entrepreneurship courses is to teach students to be more imaginative, take initiative and be ready to innovate. For this reason, Erkkilä (2000) proposes the unifying term *entrepreneurial-education* as encompassing both enterprise and entrepreneurship education.

The limitation of the term *entrepreneurial-education* is that it can easily be confused with *entrepreneurial learning*. A growing number of scholars prefer the term *entrepreneurship education* to describe all forms of training *for* and *about* entrepreneurship. Most researchers who have undertaken studies similar in both objective and design to this thesis also use the term *entrepreneurship education* (Rauch and Hulsink 2015; Mayhew et al. 2012; Mwasalwiba 2010; Fayolle, Gailly, and Lassas-Clerc 2006a; Kuratko 2005; Katz 2003; Gorman, Hanlon, and King 1997; Muñoz C, Mosey, and Binks 2011; DeTienne and Chandler 2004; McMullan and Long 1987). The term is broad enough to encompass all forms of entrepreneurship programs regardless of the purpose.

Therefore, to be consistent the author proposes the term entrepreneurship education as the unified terminology for entrepreneurship programs. The same will be used in this thesis.

The next section presents three streams of debate on the purpose of entrepreneurship education.

2.3 PURPOSE OF ENTREPRENEURSHIP EDUCATION

> *"Good science begins with good definitions"* (Bygrave and Hofer 1991)

Most definitions of EE are rooted in the definitions of entrepreneurship (see Katz 2003; Hindle 2007; Shepherd and Douglas 1997; Ronstadt, Vesper, and McMullan 1988; McMullan and Long 1987; Solomon, Duffy, and Tarabishy 2002; Solomon 2007). As a subject, entrepreneurship draws from multiple disciplines, including Economics, Finance, Business and Management, Sociology, Law, Politics and Anthropology (Parker 2004). Due to the heterogeneous provenance of entrepreneurship, scholars from various disciplines have long contended the definition and scope of entrepreneurship (Parker 2002; Bruyat and Julien 2001). For instance, labor economists broadly equate self-employment to entrepreneurship on the basis of risk-bearing residual claimants. This implies that gardening, erecting fences, barbing and running a Post Office which relative to the founding of a high technology company involves very low risk, are all forms of entrepreneurship.

Contrary to this viewpoint, business and management scholars (for example Sexton and Bowman 1984) advocate for a conceptual and pragmatic distinction between entrepreneurship and small-business ownership. They argue that entrepreneurship is characterized by innovative behavior and argue that only self-employment that involved co-ordination of factors of production (including employing workers) should be considered entrepreneurship. Moreover, critics argue that entrepreneurship is not limited to self-employment and can exist within corporations (Morris, Kuratko, and Covin 2010; Zahra and Covin 1995). They argue for broader definitions of entrepreneurship that emphasize the recognition and exploitation of opportunities (Shane and Venkataraman 2000) and the pursuit of opportunities regardless of resources being controlled (Stevenson and Carlos Jarrillo-Mossi 1986). They maintain that such definitions encompass various types of entrepreneurship, such as corporate entrepreneurship[1], social en-

1 This refers to "formal and informal activities aimed at creating new businesses inside of established companies through product and process innovation and market developments." (Morris, Kuratko, and Covin 2010, p., 12)

trepreneurship [2], nascent entrepreneurship [3], or family businesses. Furthermore, some scholars are inclined to narrower definitions of entrepreneurship based on Schumpeterian paradigm-shifting innovations (Drucker 1985) while some emphasize psychological traits and attitudes peculiar to entrepreneurship (see Parker 2004, p. 5).

To some extent, the debate over what constitutes entrepreneurship explains in part, the lack of consensus in the definition and purpose of EE. The definitions and purpose of EE are broadly underpinned by three schools of thought: *trait-approach* (see Section 2.3.1), *behavior approach* (see Section 2.3.2) and new frontiers (see Section 2.3.3). Entrepreneurship education that focuses on skills, abilities, and mindset is grounded on the 'trait approach' while EE that focuses on venture creation is underscored by 'behavior approach.' These two approaches are discussed in depth next.

2.3.1 *Trait Approach*

Earliest research efforts in entrepreneurship focused on the traits of an entrepreneur. The trait approach views entrepreneurs as champions with specific traits that differentiate them from others (McClelland 1965; Collins and Moore 1970; DeCarlo and Lyons 1979; Brockhaus 1980). According to Brockhouse Sr and Horwitz (1986) four major personality traits of entrepreneurs are; need for achievement, internal locus of control, high risk-taking propensity, and tolerance to ambiguity. Other traits that have been identified include; innovativeness,

2 Social entrepreneurship is a type of entrepreneurship that " includes: the identification of a specific social problem and a specific solution (or set of solutions) to address it; the evaluation of the social impact, the business model and the sustainability of the venture; and the creation of a social mission-oriented for-profit or a business-oriented nonprofit entity that pursues the double (or triple) bottom line" (Mair and Noboa 2006, p., 95).

3 Nascent entrepreneurship relates to young enterprises. Nascent entrepreneurs "are people actively involved in attempting to start a new business" (Wennekers et al. 2005, p., 294)

preparedness to 'think out of the box' in developing solutions to problems.

According to the trait approach, the purpose of EE is to develop the *traits* of an entrepreneur in students (Gibb 2002; Gorman, Hanlon, and King 1997). Those *traits* can be applicable in a range of different situations within an organization and society as a whole Gibb (1987). In other words, the purpose of EE is to develop skills and competencies that prepare students for life beyond the business or market economy context (Kirby 2002) and not the immediate creation of new businesses (Fayolle, Gailly, and Lassas-Clerc 2006a). Along this line of thought, Fisher, Graham, and Compeau (2008) defines EE as "the process of providing individuals with the concepts and skills to recognize [and act upon] opportunities that others have overlooked" (Fisher, Graham, and Compeau 2008, p. 315) Similarly, Fayolle et al defines EE "as any pedagogical program or process of education for entrepreneurial attitudes and skills, which involves developing certain personal qualities" (Fayolle, Gailly, and Lassas-Clerc 2006a, p. 702). This view of the purpose of EE is also referred to as *enterprise education* or 'education for enterprise' (Kirby 2004; Rae 1997).

The trait approach to EE is understandably persistent and logically persuasive. Entrepreneurs often seem like special people who make achievements, presumably, based on some special inner qualities (Gartner 1988). Those *special inner qualities* are transferable to various contexts not limited to business (Kirby 2007). Hence they should be taught and developed in individuals who may use them as they want.

Even if we assume the *trait-centric* view of the purpose of EE, we are immediately confronted with questions such as *is anyone with these skills an entrepreneur?* and *how relevant are traits to the understanding, teaching and predicting of entrepreneurship?* Although these questions

are not the focus of this thesis they are no less profound. See Carland et al. (2002) and Gartner (1988) for detailed debate on this matter.

For one thing, it is difficult to distinguish the *special* inner qualities of entrepreneurs from those of non-entrepreneurs. Jenks (1950) and Kilby (1971) strongly critique research efforts to develop a psychological profile of the entrepreneur. Also research shows that it is not possible to differentiate the entrepreneurs from managers or from the general population based on traits that entrepreneurs ought to possess (Brockhaus 1980; Brockhaus and Nord 1979; Sexton and Kent 1981).

Defining the entrepreneur using traits such as proactiveness, risk-taking, locus of control, need for achievement, tolerance of ambiguity, and the pursuit of opportunity without regard to the resources they currently control (Stevenson and Jarillo 1990) leads to tautology or generates confusion (Bruyat and Julien 2001). These attributes may be present in many fields outside new venture creation (Bruyat and Julien 2001). For instance, locus of control, need for achievement, tolerance of ambiguity are found in athletes such as baseball players and footballers. Other skills such as creativity are also found in other arts and sports. These skills do not automatically transform athletes into entrepreneurs. Nor does it help to predict entrepreneurial behavior. So suppose an EE designed for athletes including baseball players and footballers, in which skills such as creativity and traits such as locus of control, need for achievement, tolerance of ambiguity are taught: how relevant will such EE be to them?

The goal here is not to undermine the significance of learning and comparing the psychological characteristics of entrepreneurs. Rather it is to argue that such lessons can be situated in psychology and social psychology, fields of study concerned with the individual alone (Bruyat and Julien 2001). As McMullan and Long (1987) contend, if the purpose of EE is limited to raising awareness about entrepreneur-

ship, changing perceptions and attitudes, then there is no distinction from management education or psychology courses and therefore, the legitimacy of EE can be questioned.

To further explain the point, suppose an individual was required to learn how to ride a bicycle and compete in a "world" competition. One response would be to research on how to ride a bicycle and on "who is a cyclist?" - qualities and attributes of a cyclist. Such a study will investigate the mechanics and aerodynamics, physiology and the psychology of cycling. Findings could reveal cyclists' locus of control, need for achievement, tolerance of ambiguity and other characteristics that might make a good cyclist. Further steps could be taken to acquire the highest level of professional bicycle and necessary gears. Yet, this type of research ignores the obvious - that is, a cyclist in fact, cycles. Cycling involves climbing on a bicycle and riding it. It involves, pedaling, falling, rising and balancing - activities that a cyclist must do. You may learn everything about bicycles and cyclists but unless you ride a bicycle learning is not complete and you cannot claim to be a cyclist. Entrepreneurship can be likened to riding a bicycle. You can learn all the traits and skills of an entrepreneur, but without actually *doing it*, learning is not complete.

While this cycling metaphor might help to explain the limitation of the *trait approach* to entrepreneurship education, it by no means suggests that the trait approach is insignificant. Rather, it emphasizes the point that the trait approach may be a necessary but not sufficient focus for EE.

2.3.2 *Behavior Approach*

In contrast to '*trait approach*', the *behavior approach* to EE comply with a *narrow* definition of entrepreneurship that shifts the unit of analysis

from the individual level to the functional level. It emphasizes the creation of new organizations (Gartner 1988). For proponents of the *behavioral approach* such as Gartner, the creation of new businesses is the critical factor that delineates entrepreneurship from other activities (Carland et al. 2002, p. 36). This approach represents a shift from traits (attributes or skills) to behavior (action). In other words, by this approach the purpose of EE shifts from teaching about entrepreneurs to creating entrepreneurs - independent business owners or the development of opportunity-seeking managers within companies (Garavan and OĆinneide 1994). According to McMullan and Long (1987) the real promise of EE will be realized when it is strategically organized for [...] job creation. They argue that EE ought to stimulate value creating activities that create jobs. Similarly, Lackéus (2015) proposes value creation as the main goal for students in EE. Lackéus describes EE as "Learning-by-creating-value". Also, Moberg, Stenberg, and Vestergaard (2012) defines EE as "content, methods and activities supporting the creation of knowledge, competencies and experiences that make it possible for students to initiate and participate in entrepreneurial value creating processes" (p.14). The value that is created can be financial, cultural, or social. Some scholars refer to this approach to EE as 'education through enterprise' - using venture creation process to develop business and transferable skills and competences (Gibb 1987). Courses and programs aim to educate students in the area of entrepreneurship and prepare students for new ventures (Gibb 2002).

Arguably, the behavior approach is influenced by strategy scholars who contend that entrepreneurship is distinct from strategic management (Shane and Venkataraman 2000; Zahra and Dess 2001; Venkataraman 1997). Venkataraman (1997) confronted researchers and educators in entrepreneurship with the question, "What is the distinctive contribution of our field to a broader understanding of business en-

terprise?" (p.119). Venkataraman contend that to the extent that the answer to the question is unclear, delays and overlaps with other sub-fields, the legitimacy and survival of entrepreneurship in the world of business research and education is threatened. In response, Shane and Venkataraman's (2000) seminal article introduces a distinctive definition of entrepreneurship as "the identification, evaluation, and exploitation of opportunities" (p. 12). This highly cited definition of entrepreneurship is the backbone of the *behavior approach* approach to EE.

Critics argue that this view of entrepreneurship is simplistic because it proposes a linear pattern that if followed accurately, may lead to venture success. In other words, this approach introduces planning and prediction - an analytical and empirical orientation that was borrowed from hard-science disciplines. Here, entrepreneurship is taught as one of identifying opportunity, developing concepts, understanding resource requirements, acquiring resources, implementation and exit (Morris 1998). As Neck and Greene (2011) remarks, this linear flow of events is arguably not the case with entrepreneurship. They argue that entrepreneurship is neither linear nor predictable.

Another limitation of behavioral approach to EE approach is that it is exclusionary. To some extent, it suggests the omission of corporate venturing from the field of entrepreneurship unless it results in new organization (Carland et al. 2002, p. 36). In other words, executive programs, for instance, that do not emphasize venture creation within corporations may not be regarded as EE though they may encourage entrepreneurial orientation. Entrepreneurial orientation emphasize innovativeness in products and processes, proactiveness and aggressiveness in competing with industry rivals and risk-taking behaviors in terms of strategic actions in the face of uncertainty (Lumpkin and Dess 1996). Also, behavior approach seems to exclude business in-

heritors from entrepreneurial studies and questions the purchase of businesses as an entrepreneurial activity.

Even if we accept behavior related to the business start-up as the purpose of EE, a highly contentious paradigm in literature (see Fayolle, Gailly, and Lassas-Clerc 2006a), compulsory entrepreneurship programs cannot reasonably expect venture creation behavior from students Rauch and Hulsink (2015, p.189). For one thing, some students' interests may simply be to complete the academic requirements. For another, students may not have the degree of freedom to pursue entrepreneurship (Lee 2015). In fact, some studies show that mandatory EE produces unintended outcomes in students (Oosterbeek, Praag, and Ijsselstein 2010; Graevenitz, Harhoff, and Weber 2010). Rather the purpose of compulsory EE may be to increase awareness about entrepreneurship (Graevenitz, Harhoff, and Weber 2010) or provide the required knowledge and necessary skills for entrepreneurship (Oosterbeek, Praag, and Ijsselstein 2010) in which case a *trait approach* may suffice. After all, the link between EE and venture creation is not well established in the literature, in part because of the time lag between completing EE and starting a new venture (Pittaway and Cope 2007; Bird, Schjoedt, and Baum 2012). The limitation of both trait and behavior approaches to EE gives rise to a "new frontier" to EE. The next section discusses this new frontier.

2.3.3 *A New Frontier*

New frontiers to EE aim to balance between trait and behavior approaches. Two of such frontiers are *cognition*[4] and *method* approaches (Neck and Greene 2011). On the one hand, the *cognition approach* seeks to explore the potential for learning how to think entrepreneurially.

4 Cognition is a process through which sensory inputs are transformed, reduced, elaborated, stored, retrieved, and used for various purposes(Neisser 2014)

Entrepreneurship education designed with this approach will focus on the knowledge structures or mental model (Krueger 2007) that people use in decision making. It will also address questions such as *how do entrepreneurs think?* or more helpful, *how do people think entrepreneurially?* Because of its emphasis on the capacity of the mind and the dynamic approach to learning how to think entrepreneurially, the cognition approach is growing in popularityNeck and Greene 2011.

On the other hand, the *method approach* views entrepreneurship as an iterative process with uncertain outcomes. Entrepreneurship education that is underpinned by this approach focus on creativity, experimentation, and iteration. It requires teaching a way of thinking and acting built on a set of assumptions (Neck and Greene 2011). These assumptions are a) each student understands the view of the entrepreneurial world and where they locate themselves - a constructivist paradigm. b) The definition of entrepreneurship includes any organization at multiple levels of analysis. Therefore, success is idiosyncratic and multidimensional. c) emphasis on doing, then learning, rather than learn then do -experiential learning and reflective practice. d) The environment is unpredictable (Neck and Greene 2011).

2.4 DEFINITION OF ENTREPRENEURSHIP EDUCATION

Hytti (2002) states that it is impossible to examine a field of study without visiting its definition. By this, Hytti suggests that a definition is a starting point to a full understanding of the phenomena under discussion. By its definition, one may be able to discover the essence, concerns and objectives of entrepreneurship as a field of study (Mwasalwiba 2010). See Tables **??** and **??** for some definitions of EE

Hindle (2007) defines EE as the "transfer of knowledge about how, by whom and with what effects opportunities to create future goods

and services are discovered, evaluated, and exploited" Hindle (2007, p 107). This definition broadly divides EE into two main areas: behavior approach which focuses on the vocational aspect of entrepreneurship - developing skills of entrepreneurship; and trait approach which deals with meta aspects and theories of entrepreneurship. Although this definition is reasonably comprehensive, it raises two issues.

First, Hindle's definition suggests that EE involves the "transfer of knowledge." It is debatable whether knowledge can be transferred. Social and cognitive constructivist view knowledge creation as a social transaction between the learner and the teacher whereby "knowledge is created and recreated in the personal knowledge of the learner" Kolb and Kolb (2005, p., 194) rather than through transference or transmission. This view is based on the cognitive constructivist theories of Piaget and Vygotsky. People construct knowledge from what they believe and what they know based on previous experience (Bransford, Brown, and Cocking 1999).

Table 2.1: Definitions, Approaches and Characteristics of Entrepreneurship Education

Author	Nomenclature	Definition	Taxonomy	Characteristics
Pittaway and Cope (2007)	Entrepreneurship Education	...a means through which institutional culture can shift, enabling a more appropriate environment within which commercialization and academic entrepreneurship can occur.	New Frontier	an individual institution's capabilities, enterprise infrastructure
Gibb (1993)	Enterprise Education	...a means of developing certain core skills and attributes - in young people and adults alike.	Trait Approach	Personal attributes such as self-reliance, Skills, opportunity seeking
Fisher, Graham, and Compeau (2008)	Entrepreneurship Education	...the process of providing individuals with the concepts and skills to recognize opportunities that others have overlooked, and to have the insight , self-esteem, and knowledge to act where others have hesitated.	Trait Approach	Cognitive, skill-based and affective learning types
Fayolle, Gailly, and Lassas-Clerc (2006a)	Entrepreneurship Education	...any pedagogical program or process of education for entrepreneurial attitudes and skills, which involves developing certain personal qualities. It is therefore not exclusively focused on the immediate creation of new businesses	Trait Approach	Entrepreneurial culture, entrepreneurial spirit, entrepreneurial values, state of the mind
Kirby (2004)	Entrepreneurship Education	entrepreneurship education is [not] solely about encouraging "students" to set-up and run their own businesses [...] rather, it is [...] about "making a change"	New Frontier	Venture creation, "make a change" mentality,
Lackéus (2015)	Entrepreneurial Education	...if a pedagogical intervention lets students learn to create value for other people (own group and teachers excluded), it is indeed entrepreneurial education	New Frontier	Experiential learning, learning by doing, Value creation

Table 2.1: Definitions, Approaches and Characteristics of Entrepreneurship Education

Author	Nomenclature	Definition	Taxonomy	Characteristics
Hindle (2007)	Entrepreneurship education	the transfer of knowledge about how, by whom and with what effects opportunities to create future goods and services are discovered, evaluated and exploited.	New Frontier	Teaching *it* - Vocational aspect; teaching *about it* - meta aspect and theories
McMullan and Long (1987)	Entrepreneurship /Entrepreneurial education	Entrepreneurship students need something more: they need to choose projects that are central to a venture's success, not a peripheral diversion. They need to have interested collaborators from the entrepreneurial community seeking assistance.	Behavior Approach	Venture creation
Rauch and Hulsink (2015)	Entrepreneurship Education	...aims to educate people for entrepreneurship and prepare them for an entrepreneurial career	New Frontier	Human capital theory - providing knowledge about venture creation and growth; and theory of planned behavior
Binks (2005)	Entrepreneurship Education	...refers to the pedagogical process involved in the encouragement of entrepreneurial activities, behaviors and mind-sets.	New Frontier	Human Capital - development of skills for venture creation
Ekpoh and Edet (2011)	Entrepreneurship Education	...denote[s] all forms of knowledge delivering that seek to empower the individuals/students to create real wealth ...	New Frontier	Human Capital - development of skills for venture creation

Second, Hindle's definition views opportunity identification as central to EE per the opportunity-centric approach to entrepreneurship proposed by Shane and Venkataraman (2000). Critics of the opportunity-centric view of entrepreneurship contend that opportunities do not exist objectively *ex-ante*. Rather, opportunities are created *ex-nihilo* as entrepreneurs act based on their subjective beliefs (Klein 2008). In Klein's subjectivists' view, opportunity only exists in the mind of an individual as subjective images or conjectures about future possibilities, and only makes sense *ex-post*. In other words, opportunity is not an objective phenomenon rather a subjective one. Klein maintains that the unit of analysis in entrepreneurship research should neither be the discovery nor the creation of opportunities but rather on actions taken under uncertainty (Klein 2013). Shane (2012) dismisses this ontological and epistemological debate about the nature of opportunity as "unnecessary" and "needless" and Klein (2008) calls for the term "opportunity" to be dropped from entrepreneurship. Opportunity identification or creation remains a central subject in the conversation about the purpose of entrepreneurship education DeTienne and Chandler (2004).

However, building upon Hindle (2007) definition this thesis defines EE as

> any pedagogical process that involves the creation of knowledge about how, by whom and with what effects opportunities to create or replicate value are discovered or created, evaluated, and exploited.

Similar to Hindle (2007) this definition *broadly* divides EE into two parts: one grounded on the traits approach and the other on behavior approach. It acknowledges a) the significance of learning about

entrepreneurs and the theories of entrepreneurship; b) the practical component of creating or recreating value. However, it highlights the aspect of replicative entrepreneurship - imitating other entrepreneurial opportunities to appropriate entrepreneurial rent, as a part of EE. By this, it suggests that the purpose of EE can be solely for learning how to replicate what others have done.

Unlike Hindle's definition, the definition presented here views EE from a constructivist paradigm. It suggests that knowledge is created not transmitted.

The definition is holistic for the following reasons: first, the definition acknowledges the central role of opportunity in entrepreneurship (DeTienne and Chandler 2004). Although the opportunity-centric view of entrepreneurship has been critiqued (Klein 2008; Klein 2013; Shane 2012) it still has significance both in literature and practice. Entrepreneurship begins with opportunity, whether created or discovered. Second, it is oriented towards venture creation which is one of the objectives of entrepreneurship education across most developing countries where EE policies are adopted (for example Nigeria Akpan, Effiong, and Ele 2012; Arogundade 2011; Dakung et al. 2017; Ifedili and Ofoegbu 2011; Maina 2014; Okafor, Efobi, and Salako 2008; Ojeifo 2013). Third, the definition highlights the relevance of knowledge and skills in venture creation. Last, it acknowledges that entrepreneurial opportunities are not limited to *creating* innovative goods and services (referred to as *innovative entrepreneurship*) but also include *recreating* goods and services (referred to as *replicative entrepreneurship*).

The definition of EE stated above is consistent with the New Frontier approach to EE. The new frontiers offer a holistic view of EE as a pedagogical process that prepares potential entrepreneurs through practice. Drawing from the metaphor of cycling described earlier; just as learning about bicycles and cyclists improves the practice of cycling,

so does learning about the theories of entrepreneurship and traits of entrepreneurs improve the practice of entrepreneurship. And just as the practice is essential in learning to cycle, so is practice essential to venture creation and entrepreneurship education.

2.5 IMPLICATIONS OF APPROACHES FOR PEDAGOGY

Each of the approaches discussed above has strengths and weaknesses and all influence pedagogical practices being used in the classrooms today (Neck and Greene 2011). For instance, one strength of the trait approach is that it influences the lecture-based classroom environment which is the most widely used pedagogy in business schools (Mwasalwiba 2010). Lecture-based pedagogy includes guest speakers who are selected because they are successful entrepreneurs. The use of guest speakers has the potential to inspire (a construct with an emotional element) students and stimulate entrepreneurial intent (Souitaris, Zerbinati, and Al-Laham 2007).

The behavior approach of planning and forecasting influences the use of Business plan writing and Case methods. As shown in Table 2.2 cognition approach influences pedagogical methods such as cases and simulations oriented towards decision–making, design thinking and reflective practices. Method approach influences pedagogical approaches such as student business start-ups, games and virtual simulations (Neck, Greene, and Brush 2014).

2.5.1 *Business Plan*

Writing a Business plan is a significant learning process (Neck and Greene 2011) that sustains entrepreneurial intention (Souitaris, Zerbinati, and Al-Laham 2007). It still largely underpins most curricula formats

of EE in the US (Solomon and Matlay 2008). However, the amount of time spent honing secondary research skills rather than actually taking action in the real work raises some questions about its relevance. David Birch, a business guru, argues that critical entrepreneurial skills such as managing people are not learned through writing business plans (Bae et al. 2014). Because entrepreneurship -from intention through venture to exit, is iterative, most business plans may be rendered redundant in the long term. Perhaps, students write business plans too soon and unduly. Arguably, business plans are required for investment but even venture capitalists do not want business plan novels. They want proof of concept (Neck and Greene 2011).

2.5.2 *Case Study*

Case studies are also heavily used in business schools around the world (Mwasalwiba 2010). By positioning the entrepreneur as the protagonist, they explore not only the venture process but the decision-making process too.

2.5.3 *Design-based Learning*

Entrepreneurship is an applied discipline. And as Simon (1996) argues, applied disciplines are best served by design-based curricula. Design thinking requires divergent and convergent skills in observation, synthesis, searching and generating alternatives, critical thinking, visual representation, creativity, problem-solving and value creation (Neck and Greene 2011). Design thinking is a mindset that is human-centered, collaborative, optimistic and experimental. Scholars who advocate for its use argue that entrepreneurs and designers share similar patterns of thinking. Therefore teaching entrepreneurship through the design

lens can help identify and act on opportunities (Neck and Greene 2011). Neck and Greene argued that when opportunity discovery process is grounded in design principles, students are better equipped to not only recognize opportunity - Kirzner alertness, but also create opportunities - Sarasvathy effectuation (Sarasvathy 2009).

2.5.4 *Reflective Practice*

Reflection is an important process by which knowledge is developed from experience. Reflective practice is about simply sitting still and thinking. But for many, such seemingly simple practice does not come naturally, and yet, the power of the potential outcome -being aware of our actions so they can be evaluated (Brockbank and McGill 2007) seems clear. During the practice, one considers an experience that has happened and tries to understand or explain it, which often leads to insight and deep learning. Experts argue that reflective practice is particularly important for perplexing experiences, working under conditions of high uncertainty, and problem-solving; therefore it should be an integral component of EE (Neck and Greene 2011).

2.5.5 *Student Business Start-up*

If the statement "the best way to learn is by doing" is accepted as valid, then incorporating a real-world practice of business creation into entrepreneurship courses at business schools is essential. Even without empirical evidence, there is scope to argue for the significance of business start-ups. When compared to other pedagogical methods, venture creation is a high-level apprenticeship opportunity. Students emerge from business creation activities with significant experiences of

Table 2.2: A Summary of Approaches to Entrepreneurship Education and Pedagogical Implications

Approaches to Entrepreneurship Education		**Pedagogical Implications**
Trait		Didactic, lectures and guest speakers
Behavior		Case studies and business plans
New Frontiers	Cognition	Cases and simulations that are oriented towards decision–making processes. Design based learning. Reflective practice
	Method - Innovation	Student Business start-up. Virtual experiential methods – games and virtual simulations

"success" or "failure." At best, they may gain confidence from success or at least learn from an experience of failure — a feeling that is far too common in real-world entrepreneurship (Shepherd 2004). AsRokach (2014) notes, start-up activities offer the opportunity to learn about the struggles and loneliness of leadership as well as the opportunity to learn about the power of human agency.

2.5.6 *Games and Virtual Simulations*

Virtual simulations align learning, fun, and participation while exposing students to real challenges in the virtual world. Games are gradually replacing traditional simulation methods such as case studies. For instance at Babson College, a video game that is based on the theory of effectuation (Sarasvathy 2009) is designed to replace a case study for in-class discussion on entrepreneurial thinking. Games and virtual simulations support insight and skills that can later be trans-

lated into real-life situations. However, simulations are not substitutes for real-life experiences (Brawer 1997). Brawer argues that simulations should augment conventional methods of instruction but not replace them; they should be part of a larger process of entrepreneurship and business education.

2.6 OUTCOME OF ENTREPRENEURSHIP EDUCATION

The outcome of any entrepreneurship education is a function of the approach that underpins its purpose (Rauch and Hulsink 2015). For example, where it is grounded on the behavior approach, outcome is assessed by the socio-economic impact they produce; how many companies created; how many jobs created; and what kinds of jobs; what kinds of ventures are created or what form of entrepreneurship pursued (McMullan and Long 1987). Based on the definition of EE[5] proposed earlier (see Section 2.4), there are two forms of entrepreneurship that may emerge from EE. These are innovative and replicative entrepreneurship. They are discussed below.

2.6.1 *Innovative versus Replicative Entrepreneurship*

From an economist's perspective, innovation involves a process of inventing a new product, modifying it to appeal to consumer tastes, and then manufacturing and marketing it. Kanter defines innovation as the process of bringing any new idea that solves problem(s) into use (Kanter 1983). Innovation not only has an element of novelty but also a component of value creation (Tidd, Bessant, and Pavitt 2005). When applied to entrepreneurship, advocates have attempted to dis-

5 Any pedagogical process that involves the creation of knowledge about how, by whom and with what effects opportunities to *create* or *recreate* value are discovered or created, evaluated, and exploited.

tinguish innovative entrepreneurs from replicative entrepreneurs. Baumol, Litan, and Schramm (2007a) defined the innovative entrepreneur as one who "provides a new product or service or [...] develops and uses new methods to produce or deliver existing goods and services at lower cost" (p. 3); while the replicative entrepreneur is defined as one who has "no difficulty coming up with the ideas for their businesses: they simply copy what some others have done," being sure to pick a business model already in the marketplace that is "best suited to their talents, experience, and interests" (p. 107). Drawing on Baumol, Schilling, and Wolff (2009) and Baumol, Litan, and Schramm (2007a), the author defines *innovative entrepreneurship* as entrepreneurial activities that involve offering new products, new services, in a new context; while *replicative entrepreneurship* is defined as entrepreneurial activities that involve producing or selling goods or services that are already available in the market through other sources.

Almost by definition, *innovative entrepreneurship* at its extreme possesses the Schumpeterian disruptive potential - the incessant revolution of economic structures from within, destroying old structures and creating new ones (Schumpeter 1976). Also, by definition, replicative entrepreneurship will be more common than innovative entrepreneurship. The relationship between innovative and replicative entrepreneurship can be viewed as a spectrum not a dichotomy. Figure 2.1 is a graphical representation of the continuum relationship between innovative and replicative entrepreneurship.

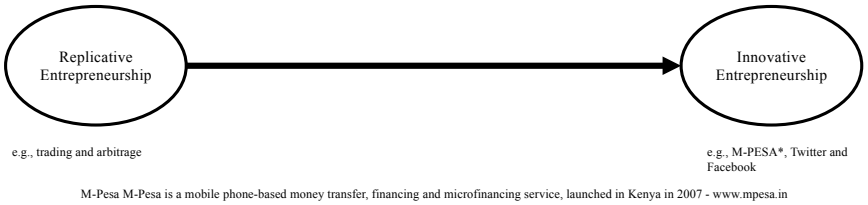
It is plausible to argue that because of its predominance, most empirical studies focus on understanding replicative entrepreneurship and their related educational experiences. Consequently, there is a paucity of research studies designed to explore the educational experiences that contribute to innovative entrepreneurship.

In Schumpeter's view, the innovative entry by entrepreneurs is the disruptive force that sustains economic growth. As Drucker paraphrases Schumpeter's analysis: "[the] dynamic disequilibrium brought on by the innovating entrepreneur, rather than equilibrium and optimization, is the 'norm' of a healthy economy and the central reality for economic theory and economic practice" (Drucker 1985, p. 27). Drucker puts it more bluntly: "Entrepreneurs innovate. Innovation is the specific instrument of entrepreneurship" (Drucker 1985, p. 30). Baumol, Litan, and Schramm (2007a) echo this point by arguing that innovative entrepreneurship can have a profound impact on economic growth.

The import of replicative entrepreneurship in capitalist economies is also well established in the literature. According to Baumol, Litan, and Schramm (2007a) *replicative entrepreneurship* represents "a route out of poverty, a means by which people with little capital, education, or experience can earn a living" (Baumol, Litan, and Schramm 2007a, p. 3). *Replicative entrepreneurs* imitate what others have done. This strategy saves time, minimizes risks and could accelerate economic development. China, for example, is credited for successfully utilizing this strategy in its developmental model since 1978 (Lin 2011).

Eighteenth-century English writer Richard Cantillon, who first defined entrepreneurs, arguably had *replicative entrepreneurs* in mind when he referred to wholesalers in Wool and Corn, Bakers, Butchers, Manufacturers and merchants of all kinds who buy products at a certain price and resell them gradually at an uncertain price, with the difference being the profit or loss (Cantillon 1931). Reynolds et al. (2002) suggest that the prevalence of *replicative entrepreneurship* (which he described as necessity entrepreneurship) in developing countries maybe positively associated with national economic growth.

Figure 2.1: Innovative-Replicative Entrepreneurship Spectrum



When juxtaposed, the relationship between innovative entrepreneurship and replicative entrepreneurship is a continuum where the degree of innovation increase from replicative entrepreneurship (at one extreme) to innovative entrepreneurship (at the other extreme). Innovative entrepreneurs *create* new things (or bring new things to the market). At its extreme form, innovative entrepreneurs commercialize inventions (Baumol, Schilling, and Wolff 2009). However, they also innovate by modifying products or bring already existing products into new markets. For instance, through reverse engineering, some Chinese entrepreneurs find ways to make electronic gadgets like smart-phones cheaper. The process of creating such a smart-phone that is cheaper and affordable to many is innovative. Also, entrepreneurs in developing economies who bring new IT solutions into their markets are also innovative entrepreneurs. It may not be novel but certainly creates new value. Replicative entrepreneurs *recreate* things. For instance, a replicative entrepreneur engages in trading (trading and arbitrage). Figure 2.1 is a graphical representation of the continuum relationship between innovative and replicative entrepreneurship.

2.7 RESEARCH AGENDA

Innovative entrepreneurs can create disruptions that sustain economic growth (Drucker 1985). For this reason, the field of innovative entrepreneurship has become a fast-growing research area with policy

interests (Baumol 2010; Mayhew et al. 2012; Baumol, Schilling, and Wolff 2009; Acs 2006; Acs and Szerb 2007). Since the field of innovative entrepreneurship is budding, advocates for linking entrepreneurship education to innovation make the argument that "education and training [...] play a key role in the innovation arms race that is essential to sustain economic growth in any economy" (Baumol, Litan, and Schramm 2007a, p., 268). Business firms cannot succeed "unless their managers and workers have the skills necessary to generate innovations or, at the very least, to recognize and purchase the rights to innovations developed by others" (Baumol, Litan, and Schramm 2007a, p., 268-269).

The links between entrepreneurship education and innovative entrepreneurship is a fruitful area of future research (Block, Fisch, and Van Praag 2017) because of the potential contribution to knowledge about how innovative entrepreneurs are trained. Scholars in this field are beginning to study how higher education influence innovative entrepreneurs. For instance, Baumol, Schilling, and Wolff (2009) explores the educational degrees of inventors and entrepreneurs. Mayhew et al. (2012) explores the link between innovative entrepreneurship and higher education experiences seeking to contribute to the understanding of how innovative entrepreneurs can be trained. Future research may consider the following gaps.

First, Pittaway and Cope (2007) calls for deeper investigation of the links between entrepreneurial outcomes (e.g., innovative intentions) and pedagogical methods. Innovative intention is a precursor for innovative entrepreneurship to the extent that entrepreneurial intention is a precursor to entrepreneurship. Scholars suggest that those pedagogical practices consistent with Experiential Learning Theory (ELT) can generate high impact on students learning and can support innovative outcomes (Neck and Greene 2011; Neck, Greene, and Brush

2014). However, some pedagogical methods are more consistent with ELT than others and may generate varying levels of effects on entrepreneurial outcomes. Therefore, future research should a) create a systematic categorization framework for pedagogical practices to rank which ones are more consistent with ELT and which ones are less; and b) examine whether certain pedagogical practices have links to innovative intentions.

Second, the antecedents of innovative entrepreneurship are still poorly understood. A plausible reason for this may be because past research on entrepreneurship education and its effects has focused on entrepreneurship per se (Ulvenblad, Berggren, and Winborg 2013; Bae et al. 2014; Blessing and Dafe 2014; Nabi et al. 2017), but did not treat innovative entrepreneurship as a separate category. As Block, Fisch, and Van Praag (2017) note, innovative entrepreneurship differs from other forms of entrepreneurship: it involves different actors (user entrepreneurs, inventors, academic entrepreneurs, employees), requires different skills and perhaps requires a different type of education (curriculum and pedagogy). As Block, Fisch, and Van Praag (2017) note, another reason may be because most empirical studies in this field use cross-sectional design (e.g., Mayhew et al. 2012) rather than experimental design. The methodological weakness of cross-sectional is the inability to predict effects.

Future research should use experimental designs to establish the antecedents of entrepreneurship education and unpick the mechanisms for innovative entrepreneurship. Within higher education, such research might examine the links between pedagogy and innovative intentions using Ajzen's theory of planned behavior (Ajzen 1985; Ajzen 1991) because university students are yet to have the opportunity to demonstrate innovative entrepreneurship (e.g., receive patents, pro-

cure resources from venture capitalists) and face unpredictable time scale for venture creation.

Lastly, most of the limited research on innovative entrepreneurship emanates from developed economies particularly from The United States and Western Europe (Block, Fisch, and Van Praag 2017). Compared to developed economies, resource constraint in emerging economies[6] can affect EE outcomes. Research in emerging economies, arguably, can offer new knowledge to literature. In recent years, emerging economies have become more important, experiencing strong growth rates and societal changes. Therefore, future research should focus on emerging economies, particularly in the African context to investigate innovative entrepreneurship (George 2015; George et al. 2016; Nkomo 2015; Nowiński et al. 2017). For instance, such research my focus on Higher Education and Institutions and examine the links between pedagogy and the development aspirations for innovative entrepreneurial activities. After all, the prevalence of innovative entrepreneurs in an economy may result in more innovation economic growth in both the short and long run (Garba, Djafar, and Mansor 2013).

2.8 CONCLUSION

This chapter presented debates on the purpose and outcomes of entrepreneurship education (the unified term for any training related to entrepreneurship). The main concern was to investigate the perceived fragmentation of the field of entrepreneurship education due to the lack of consensus on its definition, purpose and expected outcomes. The objective was to analyze the various schools of thought on the purpose of EE and to highlight the pedagogical practices that support

6 These include the economically underdeveloped countries of Africa, Asia, and South America

each school of thought, as well as the behavioral outcomes of EE. Although there is no consensus on the purpose of EE, the underpinning schools of thought are traits approach, behavioral approach and new frontiers. Analyzes of these three schools of thought on the purpose of EE show that programs that are consistent with "new frontiers" aim to balance between a narrow objective related to venture creation and a broad objective of traits and skills. This school of thought supports pedagogical methods such as cases, simulations that are oriented towards decision–making, design-based learning, reflective practice and student business start-up activities. It was noted that the behavioral outcome of EE can be innovative or replicative entrepreneurship.

In general, the review highlights some research opportunities related to innovative entrepreneurship. First, future studies should create a systematic categorization framework for pedagogy to precisely delineate various pedagogical practices on the basis of their consistency with ELT. Second, future research should examine whether certain pedagogical practices support innovative entrepreneurship. Third, future studies should investigate how entrepreneurship education influences the antecedents of innovative entrepreneurship. Moreover, future studies should consider emerging economies as a research setting for potentially new knowledge on the effect.

3

RESEARCH METHODOLOGY

Abstract

This chapter discusses the philosophical considerations underpinning the research strategy and research design, as well as justification for choosing Nigeria Higher Education Institutions, HEIs as the research setting. In the main, this thesis adopts a mixed methods research strategy with exploratory sequential research design to address the main purpose of exploring experiential pedagogy and its links to innovative entrepreneurship. Consistent with exploratory sequential research design, a case study research—used for theory building— is followed by quantitative research — used for theory testing. The research strategy and design are consistent with the philosophy of pragmatism and post-positivism respectively. The main reason for choosing Nigeria HEIs as the research setting for this thesis is because of the opportunity to simultaneously explore within a single study, the effects of contextual issues (such as whether a course is compulsory or a university is public or private) and pedagogical methods on the outcomes of EE. Moreover, exploring compulsory entrepreneurship education in a setting such as Nigeria that is characterized by economic and resource constraints issues is a research opportunity not to be missed.

3.1 PHILOSOPHICAL CONSIDERATIONS

As stated in Chapter 1, the main objective of this thesis is to explore experiential pedagogy and its links to innovative entrepreneurship. Recent works in this area suggest that a pedagogy-to-innovative-entrepreneurship relationship may be complex with several factors interacting (e.g. Block, Fisch, and Van Praag 2017; Mayhew et al. 2016; Mayhew et al. 2012; Baumol 2004). Examples of interacting factors include whether a course is elective or compulsory, or a university is public or private; content and delivery of the curriculum, and external environmental conditions (such as resource constraints and institution voids). Some of these factors have been explored quantitatively, mostly discretely (for example, Martinez et al. 2010), leaving scholars with complex questions such as RQ1-2[1]. The position in this thesis is that having a qualitative research followed with a quantitative research in a resource constrained environment may offer novel perspectives of the complex pedagogy to innovative entrepreneurship relationship. Therefore, this thesis employs a mixed methods research, MMR, strategy for the empirical studies (Article 1 and 2).

The two main reasons for employing MMR for this thesis are (a) development; and (b) expansion. *Development*, in this context, refers to the findings from a qualitative research (Article 1) helping to inform a quantitive research (Article 2). *Expansion* refers to testing the propositions from a qualitative research (Article 1) in a quantitative research (Article 2) to increase the generalizability of the findings of the qualitative research.

1 RQ1 (Addressed in Article 1): How does pedagogy relate to innovative entrepreneurship in a resource constrained environment?
RQ2 (Addressed in Article 2): Can experiential pedagogy influence intent to innovate? (sub-RQs - Does a compulsory course in entrepreneurship education affect students' intention to innovate? Does the impact of compulsory courses in entrepreneurship education vary across public and private universities?)
RQ3 (Addressed in Article 3): How is experiential pedagogy constructed? (Sub-RQ - How can pedagogy be categorized?)

MMR, as Johnson and Onwuegbuzie (2004) opined, "is an expansive and creative form of research, not a limiting form of research. It is inclusive, pluralistic, and complementary, and it suggests that researchers take an eclectic approach to method selection and the thinking about and conduct of research" (p. 17).

The arguments against MMR from a philosophical standpoint, tend to be based on the idea that research methods carry epistemological commitments (post-positivism[2] versus constructivism[3]); and that qualitative and quantitative research are separate paradigms with epistemological assumptions, values, and methods that are inextricably intertwined and incompatible between paradigms. The paradigm argument rests on "contentions about the interconnectedness of methods and epistemology in particular, that cannot be demonstrated" (Bryman and Bell 2015, p. 642). However, as Bryman and Bell (2015) also notes, the idea that research methods carry fixed epistemological and ontological commitments is difficult to sustain.

Fortunately, as Johnson and Onwuegbuzie (2004) note, recent debates about the nature of quantitative and qualitative research view both research strategies as compatible. This point of compatibility is the basis of MMR. Effective use of MMR in a way that ensures complementary strengths and non-overlapping weaknesses leads to results that can be superior to *monomethod* studies. Table 3.1 summarizes the strengths and weaknesses of MMR adapted from Johnson and Onwuegbuzie (2004) relevant to this thesis.

From a philosophical standpoint, consistent with MMR, this thesis is underpinned by pragmatism. This pragmatist worldview does not imply a lack of commitment to any one ontological or epistemological

2 This philosophical position contends that there is an independent reality that can, at least approximately, be known or discovereds using rigorous methodological techniques

3 In contrast to postpositivism, social constructivism assumes that meanings are not only co-constructed but also multiplistic, varied, and highly contextual. Constructivism guides deep inquiry into phenomena that may be impervious to the reductive techniques and standards that dominate the milieu of postpositivism.

Table 3.1: Strengths and Weaknesses of Mixed Methods Research

Strengths	Weakness
Numbers can be used to add precision to words, narrative. While words and narrative can be used to add meaning to numbers.	Can be difficult for a single researcher to carry out both qualitative and quantitative research, especially if two or more approaches are expected to be used concurrently; it may require a research team.
Researcher can generate and test a grounded theory.	Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately.
Can provide stronger evidence for a conclusion through convergence and corroboration of findings.	More expensive
Can be used to increase the generalizability of the results.	More time consuming
Qualitative and quantitative research used together produce more complete knowledge necessary to inform theory and practice.	Some of the details of mixed research remain to be worked out fully by research methodologists (e.g., problems of paradigm mixing, how to qualitatively analyze quantitative data, how to interpret conflicting results)

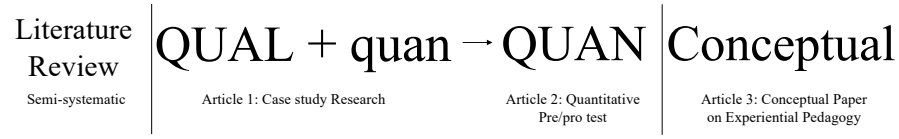
Adapted from Johnson and Onwuegbuzie (2004)

undermining. Rather, as Creswell (2013) notes, MMR allows the researcher to choose the design and methods that best meet their needs and purposes of the research. With MMR, research methods follow research questions in a way that offers the best chance to obtain useful answers. To be clear, this thesis takes an objective and post-positivist stance[4].

In line with this MMR strategy, case study research (qualitative research) shall be used to address RQ1; while a quantitative research approach shall be used to address RQ2. Both research questions 1 and 2 are addressed in Articles 1 and 2 respectively. Specifically, the findings from the qualitative research in Article 1 shall help to inform the quantitive research in Article 2. The findings from Article 1 shall

4 Eisenhardt and Graebner (2007) notes that theory building by cases follows objective and positivists stance.

Figure 3.1: Research Design for the Thesis



be presented as a set of propositions. Testing the propositions (from Article 1) in Article 2 shall helps to increase the generalizability of Article 1 findings.

3.2 RESEARCH DESIGN

Consistent with MMR, the research follows an exploratory sequential design commencing with a qualitative review of literature for setting research agenda, case study research for theory-building (to generate propositions) and quantitive research for theory-testing (Creswell 2013). The case study research and quantitative research follow inductive and deductive[5] strategies respectively. Figure 3.1 shows a mixed method design for the thesis. The order of appearance of the three Articles of this thesis is a close reflection design depicted in Figure 3.1. It is important to emphasize that among the three Articles, Articles 1 and 2 are empirical papers; Article 3 is a conceptual paper that draws on the empirical findings of Article 1 and 2.

The first Article, Article 1, explores pedagogy ties to innovative aspirations using inductive case study research. The use of case study research supports building a theory of how pedagogy links to innovative entrepreneurship. The post-positivist stance of theory building

5 According to Thomas (2006) inductive strategy refers to the use of detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data. In order words the researcher allows the theory to emerge from the data. Deductive strategy refers to data analyses that set out to test whether data are consistent with prior assumptions, theories, or hypotheses identified or constructed by an investigator.

from cases led to the collection of both qualitative and quantitative data (Eisenhardt and Graebner 2007; Eisenhardt 1989). The collection of both qualitative and quantitative data allows for triangulation; that is seeking convergence and corroboration of results from different methods studying the same phenomenon.

As for the decision to conduct a single case study, it was based on the necessity to gain a deep understanding and convey in-depth insights about the understudied social setting (Stake 1995). Detailed description, of a social context so unfamiliar to an audience - management scholars broadly, and entrepreneurship education scholars specifically- could be achieved better through a single case (Geertz 1973). A disadvantage of multiple case studies is that constrained by the number of cases, contextual descriptions can be rather "thin," focusing on surface data rather than deeper social dynamics. While the advantage of a single case over multiple cases, as Dyer Jr and Wilkins (1991) argues, is the communication of deeper contextual insights of a phenomenon. A deep and nuanced inquiry made possible by a single case can lead "researchers to see new theoretical relationships and question old ones" (Dyer Jr and Wilkins 1991, p. 614). The theory that emerges from such deep insights "will be both more accurate and more appropriately tentative because the researcher must take into account the intricacies and qualifications of a particular context" (p. 615). Moreover, a good reason for adopting a single case, among others, is the existence of "extreme examplars" (Eisenhardt and Graebner 2007, p. 27). In the case of this thesis, the ability to undertake research in Nigeria, a context with atypical social, political and economic dynamics that may affect entrepreneurship, and to secure access to an extreme exemplar institution where student groups are given $250 grants to start business as part of an entrepreneurship education, was an opportunity not to be missed.

Article 2 is a quantitative research evaluating the effects of experiential pedagogy used in entrepreneurship education across three universities: one public and two private universities. The use of a quantitative research approach offers the specific benefit of enhancing the generalizability of the findings of a qualitative study. In this way, the use of the quantitative research approach complements the study in Article 1 and is consistent exploratory sequential design of the thesis. Using deductive strategy, and consistent with post-positivist stance, the study in Article 2 tests the hypotheses drawn from the theory developed in Article 1. Specifically, the study adopts a longitudinal/pretest-posttest research design and the theory of planned behavior to investigate the effects of experiential pedagogy on the antecedents of innovative entrepreneurship. Longitudinal research with repeated measures design allows a researcher to identify and quantify the direct impact of the education program on the participant regardless of selection bias and previous background (Lorz 2011). Such a design has much stronger power to detect or predict effects than cross-sectional/independent designs used in most impact studies (Field 2013).

Having addressed the philosophical underpinnings of this thesis and the research design, the remainder of this chapter discusses why Nigeria was selected as the research setting for this thesis; and the challenges of entrepreneurship education in Nigeria.

3.3 OVERVIEW OF THE RESEARCH SETTING

The research setting for the research in this thesis is the Higher Education and Institutions, HEI in Nigeria. Nigeria, an emerging economy in Sub-Saharan Africa arguably offers an opportunity for new insights into the ties of innovative entrepreneurship to higher education for three main reasons: a) economic and resource constraint

issues; b) variances between university types; c) policy of compulsory entrepreneurship education. These three conditions are common in other emerging economies in African countries such as Ghana, Kenya, Uganda, and Botswana.

3.3.1 *Economic and Resources Constraint Issues:*

Over the years, economic challenges have led to education budget cuts and funding constraints on Nigeria HEI. As a result, there is a shortage of qualified academic staff and lecture halls are severely overcrowded in public universities. In one case, Obafemi Awolowo University in Ife saw its academic staff increased from 962 to 973 (1%) between 1988 and 1998, but in the same period, student enrollment rose by 56% (Hartnett 2000). Also, 33.1% of youths aged 15 to 24, and 20.2% for those aged 25 to 34 are unemployed (NBS 2017, p. 2). Recent economic recession and cuts in public spending following the sharp decline in crude oil prices - the largest source of revenue, from $115 in 2014 to $30 in 2016 (WENR 2017) exacerbates this situation. The underfunding of public universities may have implications for the nature of pedagogy that can be applied in entrepreneurship education. Also, the high level of unemployment may *encourage* students to consider self-employment as a career option after graduation.

Besides economic issues, there are particular challenges to starting a business which may affect the desirability of entrepreneurship as a career option to students. The World Bank ranks the country 146 out of 190 on the ease of doing business (Bank 2018). Some of the challenges facing entrepreneurship are institutional. Examples include bureaucratic administrative structures that delay registering a business, securing relevant permits, registering property and enforcing contracts; customs controls that increase the time and cost of trading

across borders; and difficulty to secure credit and the high-interest rates that come with it). Other challenges are infrastructural such as the unavailability of reliable electricity and good transport networks. Based on Johns (2006) argument on the role of context in management research, it is plausible to expect the institutional and infrastructural challenges listed above to affect students' attitudes, aspirations and behavior associated with entrepreneurship in general and innovative entrepreneurship in particular.

3.3.2 *University Type - Public versus Private:*

There are 86 public universities (40 federal and 46 states) and 69 private universities in Nigeria. All universities are monitored by the National Universities Commission (NUC) which is a government organization under the Federal Ministry of Education (FME) (NUC 2017). The differences between public versus private universities regarding institutional characteristics and socioeconomic background of students, offer opportunities for new insights into the entrepreneurial outcomes from entrepreneurship education across the two universities types.

Whereas public universities are subsidized by government funding, private universities are mostly independent of government control and government funding. As a result, perhaps, public universities charge relatively lower tuition fee than private universities. Although private universities are often linked to churches and supported by private donations (Zimmer and Toma 2000), high tuition fees help to cover operating costs. For example, Lagos Business School, a private university owned by Prelature of Opus Dei, an institution of the Catholic Church (Lagos Business School 2018) charges on average, ten times the tuition fee of public universities.

Although accurate numbers are difficult to find, estimates suggest that less than 1% of students seeking admission into universities apply to private universities (WENR 2017). Put differently, private universities attract fewer students than public universities. Among other reasons, the reason why private universities attract fewer students may be due to high tuition fees they charge.

One implication of high tuition fee in private versus low tuition fee in public universities is that students in private universities are more likely to come from middle to high socioeconomic status background; while public universities attract students from a broader range of socioeconomic backgrounds including low, mid or high socioeconomic status.

Another implication is that public universities are more likely to have higher staff to students ratio than private universities. A report in 2012, found that the University of Abuja and Lagos State University (both public universities), had staff to student ratios as high as 1:122 and 1:114 respectively (WENR 2017) whereas private universities ratios are typically in the range of 1:11 to 1:20 (THE 2018b; THE 2018a) which is comparatively lower than public universities.

Given the difference between public and private universities stated above, one can expect some variation in how pedagogy is applied across public and private universities. As an example, the low staff to students ratios likely makes some in-class experiential pedagogical practices (e.g., use of case study discussion) more feasible in private than in public universities which are characterized by large classes. The variances in pedagogy applied may influence the nature of impact entrepreneurship education may have on students intentions and behaviors towards entrepreneurship.

3.3.3 *Compulsory EE Policy*

The Federal Government of Nigeria launched a policy of compulsory courses in entrepreneurship[6] for all students across public and private universities since the 2007/2008 academic session (Olorundare and Kayode 2014; Akpan, Effiong, and Ele 2012; Adejimola and Olufunmilayo 2009; Dakung et al. 2017). One main reason for this policy is to tackle high youth unemployment by encouraging graduate entrepreneurial activities which may lead to job creation (Olorundare and Kayode 2014). Besides Nigeria, other emerging countries in Africa such as Ghana, Botswana, Uganda and Kenya have implemented similar compulsory courses in entrepreneurship (Farstad 2002). This policy of compulsory courses in entrepreneurship[7], created by the National Policy on Education (Nigeria 2013, p. 28), further complicates the situation of Nigeria HEIs making it an interesting research setting for studying entrepreneurship education.

Most studies that assessed elective courses in entrepreneurship education reported a positive impact (for example Gielnik et al. 2015; Rauch and Hulsink 2015; Souitaris, Zerbinati, and Al-Laham 2007) while most studies that assessed compulsory courses in entrepreneurship education reported negative impacts. The policy of compulsory course in entrepreneurship education creates a natural experimental condition to gain new insights on the effect(s) of EE.

6 Compulsory courses are units of teaching either during school or after school that students have [*to take*] but did not freely elect to take; "it is training required to complete or graduate from a particular university course [*for which participants may not have been interested in*]" (Martinez et al. 2010, author's additional words in italics).

7 The policy aims to inculcate in trainees the ability to:
Identify and solve problems using critical and creative thinking.
Work effectively with others as a proactive team member and cultivate the ability to resolve conflict.
Organize and manage one-self and one's activities.
Collect, analyze, organize and critically evaluate information (to make decisions) that must be carried through.
Communicate and negotiate effectively.
Reflect on experiences and explore various strategies for effective learning.

3.4 CHALLENGES OF ENTREPRENEURSHIP EDUCATION

Following the policy of compulsory EE in Nigerian Higher Education and Institution (HEI), all universities have set up Entrepreneurship Development Centre (EDC)s (Adejimola and Olufunmilayo 2009). The responsibilities of the centers include: to promote a university-private sector collaboration, to teach and to promote research in entrepreneurship and innovation. They aim to deliver EE through academic and private-sector-based instructors.

The main challenges facing EE in Nigeria can be grouped into curriculum, pedagogy and sustainable environment for entrepreneurial action (Nwekeaku 2013).

3.4.1 *Curriculum*

Solomon, Duffy, and Tarabishy (2002) advocate that curriculum for EE should include the following: a focus on attributes, skills, and tasks, an aspect of concrete experience gained from participating in live projects, directing contents to a particular stage of venture development, and promoting functional integration. Similarly, Peter Drucker proposed that entrepreneurship is practice. In other words, the knowledge gained in EE is largely defined by practice (Drucker 1985).

In Nigeria, the curricula components of EE has been questioned. Ifedili and Ofoegbu (2011) note that EE, as delivered in Nigeria universities is "not challenging enough." Olorundare and Kayode (2014) state that a major defect in universities and business schools is its theoretical inclination. Nwekeaku 2013 calls for “immediate review of the entrepreneurship curriculum for result oriented skills and func-

tionalism" (Nwekeaku 2013, p., 51). Adejimola and Olufunmilayo (2009) argue for a curriculum design that is based on market research or client demand. Nwambam, Nnennaya, and Nwankpu (2018) report that the instructional materials available in the universities are inadequate for teaching and learning entrepreneurship. As a result, students resort to the internet for access to instructional materials which may be expensive and time consuming for an average student. In other words, instructional facilities/materials for EE and the entrepreneurship curricular contents do not adequately equip students with the knowledge, resources, and skills to establish on their own. Put differently, there is a strong focus on theory with little regard for practicality and practicing (Maina 2014).

3.4.2 *Pedagogy and Faculty*

As noted earlier, public universities are characterized by high staff to students ratio. Large class-size is a common problem in public universities. Traditional lecture-based classrooms are still ver most popular many universities across Nigeria. The effectiveness of these methods has been questioned in the literature (Neck and Greene 2011; Drucker 1985). The implication of this situation is the challenge of embedding experiential learning teaching practices in large lecture-based classrooms. To emphasize the import of pedagogy, John, Singh, and Adesola (2014) results indicate that undergraduates are more likely to embrace entrepreneurship when courses are more practical-oriented than theory-oriented, lecturers are to some extent entrepreneurs, have more opportunity for internship, and have a healthy collaboration with relevant industry practice too.

Table 3.2: Curriculum and Pedagogy of Some Business Schools in Nigeria

School/University	Entrepreneurship (Related) Programme	Modules	Pedagogy
Lagos Business School (Pan-Atlantic University)	Modular Executive MBA Executive MBA	Business in Emerging Markets Entrepreneurship	Seminars and Guest speakers
			Case study & Business Planning
			Action Learning
Metropolitan School of Business & Management	Bachelor of Business Management	Business Management Business Planning and Goal Setting	Lectures
			Business Planning
Business School Netherlands	Management Development Programme Skills Development Programme	Learning to Learn Situational Leadership Team Building	Lectures
			Action Learning
Enterprise Development Center (Pan-Atlantic University)	Certificate in Entrepreneurial Management Essential Management Skills	Introduction to Entrepreneurship Preparing your Business Plan Entrepreneurial skills and Presentation Idea generation Starting new business Business plan	Lectures
			Business Planning Practitioners/Private sector-based instructors

Occasionally, business plans, case study analysis and guest speakers are used in EE especially in private universities. Some private universities have affiliations to institutions in the West. As shown in Table 3.2, business schools, such as Lagos Business School (LBS), Metropolitan School of Business and Management (MSBN), and Business School Netherlands Nigeria (BSNN) deploy a range of pedagogical methods in EE from *traditional lecture-based practices to more experiential learning based practices* (e.g., case study, business plan, action learning and practitioners in the classroom). For instance, LBS invites guest speakers in their classrooms, case study, and business planning methods. LBS and MSBN claim to use action learning[8]. Action learning involves a continuous process of "learning and reflection with the support of a group of colleagues, working on real issues" (McGill and Brockbank 2003).

Regarding affiliations with Western universities, LBS is affiliated with IESE Business School in Barcelona, MSBN is affiliated to their London campus in the UK and BSNN is an extension of their campus in the Netherland. It is reasonable to assume that their affiliations influence curriculum and pedagogy. They probably copy the curriculum and pedagogy of partner universities in the West and replicate them in the Nigerian context. This act of copying curriculum raises questions about acontextuality of EE.

In addition to pedagogy, some scholars in the Nigerian context have raised concerns regarding the training of faculty. Olorundare and Kayode (2014) note that insufficiently skilled workforce is a serious challenge to entrepreneurship education in Nigerian universities. Also, Nwambam, Nnennaya, and Nwankpu (2018) call for regular training and retraining of lecturers/instructors for competence in the teaching of entrepreneurship education.

8 It is not clear what they mean by action learning. But it is plausible to assume that this involves some kind of practical oriented work.

3.4.3 *Supporting Environment*

As noted earlier, the socio-economic, cultural and political dynamics in Nigeria may enhance or inhibit entrepreneurship and indirectly influence the outcomes of EE. Entrepreneurship thrives when there is a supportive environment for doing business (Bank 2012a). The perceived lack of resources and supportive institutions in place for entrepreneurship may affect students' desirability of entrepreneurship. Resources and strong institutions include regulations and tax incentives, hard infrastructures such as office spaces, soft infrastructures such as power supply and internet access, easy access to finance, business incubators and other favorable government policies that increase the ease of doing business (Bank 2012a). Contrary to favorable conditions, a hostile environment may inhibit entrepreneurial actions. Lack of a sustainable environment and availability of resources may pose constraints which arguably may influence the development of entrepreneurial intentions (Reynolds et al. 2002). Scholars highlight the role of hard and soft infrastructures, stronger institutions for tax and regulations, and easy access to finance may support entrepreneurial actions (Maina 2014; Nwekeaku 2013; Ihugba, Odii, and Njoku 2014).

Also within universities, there is also a lack of enabling business environment. As Nwambam, Nnennaya, and Nwankpu (2018) describe it, the facilities available in the universities are "grossly inadequate for the teaching and learning of entrepreneurial studies" (p., 11).

3.5 SUMMARY

This thesis adopts a mixed methods research, MMR strategy to address the main purpose of this thesis — to explore experiential pedagogy

and its links to innovative entrepreneurship. The two main reasons for employing MMR are (a) to deeply explore a phenomenon (explores pedagogy ties to innovative aspirations) using a case study research to inform a quantitive research; *(b)* to test theoretical propositions from case study research in a quantitative research to increase the generalizability of the findings of the qualitative research. The case study research allows for theory building while the quantitative research (using the theory of planned behavior) allows for theory testing. The methodology and exploratory sequential research design are consistent with the philosophy of pragmatism and post-positivism respectively.

The research setting for the thesis is Nigeria Higher Education Institutions, HEI. Owing to resource constraints, weak institutions and policies to support innovation, compared to developed countries, Nigeria HEIs arguably offers the opportunity of unpacking the entrepreneurship education pedagogy to innovative entrepreneurship relationship with minimal policy mixing effect.

Moreover, the difference between public and private universities stated above and the policy of compulsory entrepreneurship education provides the opportunity to simultaneously explore contextual issues (such as compulsory education and university type — private versus public) and pedagogical methods that may impact the outcomes of EE in a single study. In short, Nigerian HEI is an *interesting* empirical setting to unpack the links between EE and innovative entrepreneurship.

Part II

THE THREE ARTICLES

With the research problem and methodology clearly defined in Part I, this Part presents two empirical studies that complement each other. Chapter four (Article One) - a qualitative study that investigates the link between experiential pedagogy and innovative aspirations. It ends with two propositions. Chapter five (Article Two) is a quantitative study underpinned by the theory of planned theory that builds on the propositions from Article One and tests hypotheses using Structural Equation Modeling. Chapter six (Article Three) synthesizes the findings of Article One and Two and makes conclusions on the nature of the relationship between experiential pedagogy and innovative entrepreneurship.

4

THE MAKING OF INNOVATIVE ENTREPRENEURS IN BUSINESS SCHOOLS: LESSONS FROM A RESOURCE CONSTRAINED ENVIRONMENT

Abstract

Nurturing innovation has become a central rather than peripheral focus of entrepreneurship education in most Business Schools in the West. Yet the link between pedagogy and innovative entrepreneurship is under explored. Using a case study approach this study explores experiential pedagogy —teaching practices consistent with experiential learning theory— in a Business School in a developing country. The findings show that using experiential pedagogical methods in entrepreneurship education stimulates innovation learning outcomes. Specifically, student business startups and the use of practitioners strongly inspires students attitude and affinity for innovative entrepreneurship. Also, curriculum and pedagogy are contextualized to achieve maximum impact in a resource constrained environment. The contributions to entrepreneurship education theory and implications for practice are discussed.

4.1 INTRODUCTION

Innovation capabilities are in high demand because of the potential outputs of innovative entrepreneurs[1]. Innovative entrepreneurs can

1 For this study, innovation is an economic or social rather than a technical term. This means that the term innovative entrepreneurship is not limited to creation of

commercialize inventions, *create* new products, processes and services, or transmute value of products and services (Baumol 2010). Because innovative capabilities are in high demand some business schools are attempting to reposition the capability to innovate as a "central rather than peripheral focus" of entrepreneurship education (Mayhew et al. 2016). Scholars are interested in understanding how entrepreneurship education, in specific and business schools, in general, inspire innovative entrepreneurs (Muñoz, Guerra, and Mosey 2019; McClure 2016). Although various theoretical lenses have been used to explore the peculiarities of entrepreneurship education and its influence on various outcomes such as opportunity identification (Muñoz C, Mosey, and Binks 2011; DeTienne and Chandler 2004), entrepreneurial intention (Rauch and Hulsink 2015), and behavior (Gielnik et al. 2015), surprisingly, there is a paucity of conceptual and empirical work targeted at understanding whether pedagogy inspires aspirations for entrepreneurship in general, and innovative entrepreneurship in particular (Mayhew et al. 2012; Mayhew et al. 2016). In particular, little is known about whether certain pedagogical methods in a resource constrained environment may inspire innovative entrepreneurship given the evidence that experiential pedagogical methods are potentially viable means of promoting and sustaining learning outcomes than traditional lecture-based pedagogy (Arranz et al. 2017). This paper attempts to address this gap by posing the question: How does pedagogy relate to innovative entrepreneurship in a resource constrained environment?

Recent works relevant to this question focus on two aspects which are considered to be important. The first aspect is the role of experien-

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new products processes or services, but also creating new markets for products, processes and services; changing the yield of resources; or as changing the value and satisfaction obtained from resources by the consumer (adapted from Drucker 1985, p. 33). Innovative entrepreneurs purposefully search for changes, and in the systematic analysis of the opportunities such changes might offer for economic or social innovation (Drucker 1985, p. 35).

tial pedagogy in developing competences that may shape cognitive ability to identify opportunities for innovation (Arranz et al. 2017; Barbera et al. 2015; Gielnik et al. 2015). We define *experiential pedagogy*[2], consistent with experiential learning theory, as teaching practices that engage students within and outside the classroom to learn by experimentation and reflection in order to draw conclusions on alternative ways to act differently. The other aspect is the role of stakeholders such as administrators and entrepreneurship educators in building the innovative and entrepreneurial universities that can nurture aspirations for innovative entrepreneurship (McClure 2016; Morris and Kuratko 2014; Mars, Slaughter, and Rhoades 2008).

Although compelling, the experiential pedagogy thesis has received limited empirical testing to conclude that it has links to innovative entrepreneurship. In particular, it is not known which specific pedagogical methods enable intentions for innovative entrepreneurship. Nor is it fully known how stakeholders in developing countries with resource constraints contextualize entrepreneurship education to compensate institutional voids and yet inspire innovative entrepreneurship.

We report the findings of an in-depth case study of experiential pedagogy applied in entrepreneurship education application at one Nigerian Private University with a dedicated Entrepreneurship Development Center and business school. The findings reported are a set of propositions explaining the links between experiential pedagogical methods and innovative aspirations and behaviors. The evidence suggests that experiential pedagogy involves the practice-oriented curriculum delivered by engaged-faculty who create dynamic and challenging learning environments as well as co-curricular activities that provide out-of-classroom learning experiences. Second, experien-

2 Other authors describe this method of teaching and learning as active learning, collaborative learning, engaged learning. However, the author argues that the term experiential pedagogy is most appropriate since all other terminologies implicitly acknowledge that such learning methods are grounded in experiential learning theory

tial pedagogy helps to transforms students' attitudes and perceived feasibility of innovation. Finally, experiential pedagogy can trigger innovative aspirations and supports innovative behaviors. The empirical grounding of those ideas is the subject of this article.

Our purpose in this study is not to provide a curriculum for teaching. Rather our purpose is to explore experiential pedagogy in a resource constrained environment with institutional voids, and to unpack its links to innovative aspirations, shedding light on how business schools in developing countries can raise their chances of inspiring innovative entrepreneurs. We hope that this study contributes theoretically to a deeper understanding of how business schools can nurture innovative entrepreneurship and the role of experiential pedagogy in the process.

The following section provides an overview of the literature on innovative entrepreneurship and higher education; innovation and resource constraints; and the conceptual framework underpinning our study of experiential pedagogy in a entrepreneurship education. After a detailed description of the research method and case, we present the findings in four categories: stakeholders, curriculum and pedagogy, facilitating environmental conditions. and outcomes. We conclude with a summary of our findings and their implications for innovative entrepreneurship theory and entrepreneurship education practice in business schools.

4.2 LITERATURE REVIEW

4.2.1 *Innovative Entrepreneurship and Higher Education*

> Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. It is ... capable of being learned, capable of being practiced.
> *(Drucker 1985, p. 19)*

Rather than imitate prevailing practices and existing routines [3], innovative entrepreneurs question "the rules of the game," founding firms that exhibit novelty and act differently from others. Innovative entrepreneurs *create* new products, processes and services, commercialize inventions or transmute value (Cliff, Jennings, and Greenwood 2006; Drucker 1985) either through new startups or within existing firms. Put differently, innovative entrepreneurship takes various forms including product to market innovations, technological processes innovations and novel organizational designs. Innovation is essential for differentiation in a competitive business environment and the innovative entrepreneur is the central figure in the innovation process (Embassy-Israel 2016).

Since the field of innovative entrepreneurship is growing, advocates for linking entrepreneurship education to innovation make the argument that "education and training [...] play a key role in the innovation arms race that is essential to sustain economic growth in any economy" (Baumol, Litan, and Schramm 2007a, p., 268). Business firms cannot expect continuous success "unless their managers and workers have the skills necessary to generate innovations or, at the very least, to recognize and purchase the rights to innovations developed by others" (Baumol, Litan, and Schramm 2007a, p., 268-269). These possible consequences of innovation are the reasons why it is important to study the origins of innovative entrepreneurs in business schools. Within entrepreneurship education research, innovative entrepreneurship "is associated with a *desire to continually advance ideas*, whether on one's own or in collaboration with others" (Mayhew et al. 2016, p. 423). From Drucker's standpoint, innovative entrepreneurship begins with the recognition of innovative opportunities[4] and a conscious

3 Described as replicative entrepreneurship see - Cliff, Jennings, and Greenwood (2006) and Baumol, Litan, and Schramm (2007a)

4 *Recognising innovative opportunities is not the focus of this study. Peter Drucker identified seven sources for innovative opportunities: The first four sources are visible primarily to*

plan to exploit them. The later, a conscious plan to exploit innovative opportunities, is what we refer to as innovative intention[5]. Innovative intention, from Ajzen (1985) position, is an antecedent of innovative entrepreneurship. Innovative entrepreneurship, as with any planned behavior, is arguably hard to observe and involves "unpredictable time lags" (Souitaris, Zerbinati, and Al-Laham 2007, p. 568). Because of this unpredictability, and consistent with our focus on exploring whether experiential pedagogy inspires innovative aspirations we limit our scope of effect of education on innovative entrepreneurship to innovative aspirations and associated behavior that emerge at the end of an entrepreneurship course. This conceptualization is consistent with Mayhew et al. 2016; Mayhew et al. 2012.

However, there is a lack of consensus on the effects of higher education on innovative entrepreneurship. On the one hand, some studies suggest that higher education can positively influence the cultivation of innovative entrepreneurial intentions (Mayhew et al. 2016). On the other hand, some studies show that university students do not perceive higher education as having a direct influence on innovativeness (İlhan Ertuna and Gurel 2011), and business creation (Arranz et al. 2017; Fayolle and Gailly 2015). One aspect of this debate over the effect of higher education which is considered important relates to the role of curriculum and pedagogy in training innovative entrepreneurs. Surprisingly, this is aspect is under-explored.

Some scholars suggest that curriculum and experiential pedagogy - those teaching practices within and out-of-class that are consistent with experiential learning theory, can support innovative outcomes

people within an industry or service sector. These four source areas are: • The unexpected—the unexpected success, the unexpected failure, the unexpected outside event; • The incongruity—between reality as it actually is and reality as it is assumed to be or as it "ought to be"; • Innovation based on process need; • Changes in industry structure or market structure that catch everyone unawares. The second set of sources for innovative opportunity, a set of three, involves changes outside the enterprise or industry: • Demographics (population changes); • Changes in perception, mood, and meaning; • New knowledge, both scientific and nonscientific. (Drucker 1985, p. 35)

5 or innovative aspirations or intent(ion) to innovate

and may help to train innovative entrepreneurs (Mayhew et al. 2016; Baumol, Schilling, and Wolff 2009); While others, for instance Arranz et al. (2017), find that out-of-class activities decrease capacity and intention to start a business. One can argue that innovative intentions are complex, nuanced and varies based on, perhaps not only personal experiences of students such as entrepreneurial kin but also curriculum and pedagogical practices– such as experiences with faculty and out-of-class experiences.

4.2.2 *Innovation and Resource Constrained Environment*

When juxtaposed against developed economies, developing economies, arguably, offer the opportunity of unpacking the entrepreneurship education pedagogy to innovative entrepreneurship relationship with minimal policy mixing effect. Some developing countries, compared to developed countries, arguably have resource constraints, weaker institutions and policies to support innovation. As some scholars argue, exploring management theories in those developing countries (in Africa for instance) can potentially yield new insights (Nowiński et al. 2017; Nabi et al. 2017; Nkomo 2015; George et al. 2016; George 2015).

Nigeria, for example, presents many opportunities and particular challenges to starting a business. The World Bank ranks the country 146 out of 190 on the ease of doing business (Bank 2018). Some of the challenges facing entrepreneurship are institutional. Examples include bureaucratic administrative structures that delay registering a business, securing relevant permits, registering property and enforcing contracts; customs controls that increase the time and cost of trading across borders; and difficulty to secure credit and the high-interest rates that come with it. Other challenges are infrastructural such as the unavailability of reliable electricity and good transport networks.

Based on Johns (2006) argument on the role of context in management research, it is plausible to expect the institutional and infrastructural challenges listed above to affect students' attitudes, aspirations and behavior associated with entrepreneurship in general and innovative entrepreneurship in particular. For one, the challenges can dampen students aspirations for innovative entrepreneurship because as Liu (2011) notes, institutional voids may negatively influence innovation. For another, as Liu (2011) notes, institutional voids can offer opportunities to create innovative business models. In either case, a resource constrained business environment such as Nigeria offers the research opportunity for new perspectives on the entrepreneurship education pedagogy to innovative entrepreneurship relationship.

4.2.3 *Conceptual Framework*

As Alavi and Gallupe (2003) argue, a comprehensive appraisal of any entrepreneurship education initiative should incorporate the perspectives of all primary and direct stakeholders in the program such as administrators, faculty and students. Such a comprehensive appraisal framework should also incorporate the processes that make up the course (such as pedagogy and curriculum), as well as desired educational outcomes of the program. Accordingly, the conceptual framework we use for this study is adapted from the framework of program effectiveness proposed by Alavi and Gallupe (2003). This framework shows the two dimensions for assessing an education initiative: the stakeholders dimension (administrators, students, and instructors), and practices dimension (curriculum and pedagogy). We argue that these two dimensions are essential when exploring experiential pedagogy and its links to innovation outcomes.

Figure 4.1 shows the framework as it applies to this study. The framework shows that administrators, faculty and students are the

direct stakeholders of experiential pedagogy; and that experiential pedagogy may enable a transformation of mindset that can trigger innovative aspirations and consequently, innovative behavior.

4.2.3.1 *Stakeholders*

Students engage entrepreneurship course with difference learning styles, demographic background and personal experiences. Thus, they may have different expectations of their learning experiences. Administrators develop the course content, organize the teaching practices and allocate the resources for an entrepreneurship course. They are responsible for creating a dynamic and effective curriculum for training entrepreneurs. Faculty can create dynamic and challenging environment[6] for students to *engage* in learning (Mayhew et al. 2012). Their teaching styles, attitudes and practices impact the learning outcome of an entrepreneurship course Alavi and Gallupe (2003). Together with administrators, faculty are responsible for creating environment for students to *engage* in learning by taking *actions* and *reflecting* on the outcomes.

4.2.3.2 *Supporting Conditions*

Given that the possibility of market for newly introduced goods and services is not necessarily available to all, factors that affect the market such as institutional framework -financial and regulatory as well as favorable economy limit the degree of freedom to pursue entrepreneurship (Wilson and Martin 2015). It is reasonable, therefore, to argue that those factors may influence the outcomes from experiential pedagogy.

4.2.3.3 *Experiential pedagogy*

Arguably, two essential components of experiential pedagogy are practice-oriented curriculum and pedagogy. A practice-oriented cur-

6 Challenging learning environment -where faculty challenge students ideas and encourage students to challenge their ideas or think outside the box to solve problems, is a token experiential pedagogy (Mayhew et al. 2012).

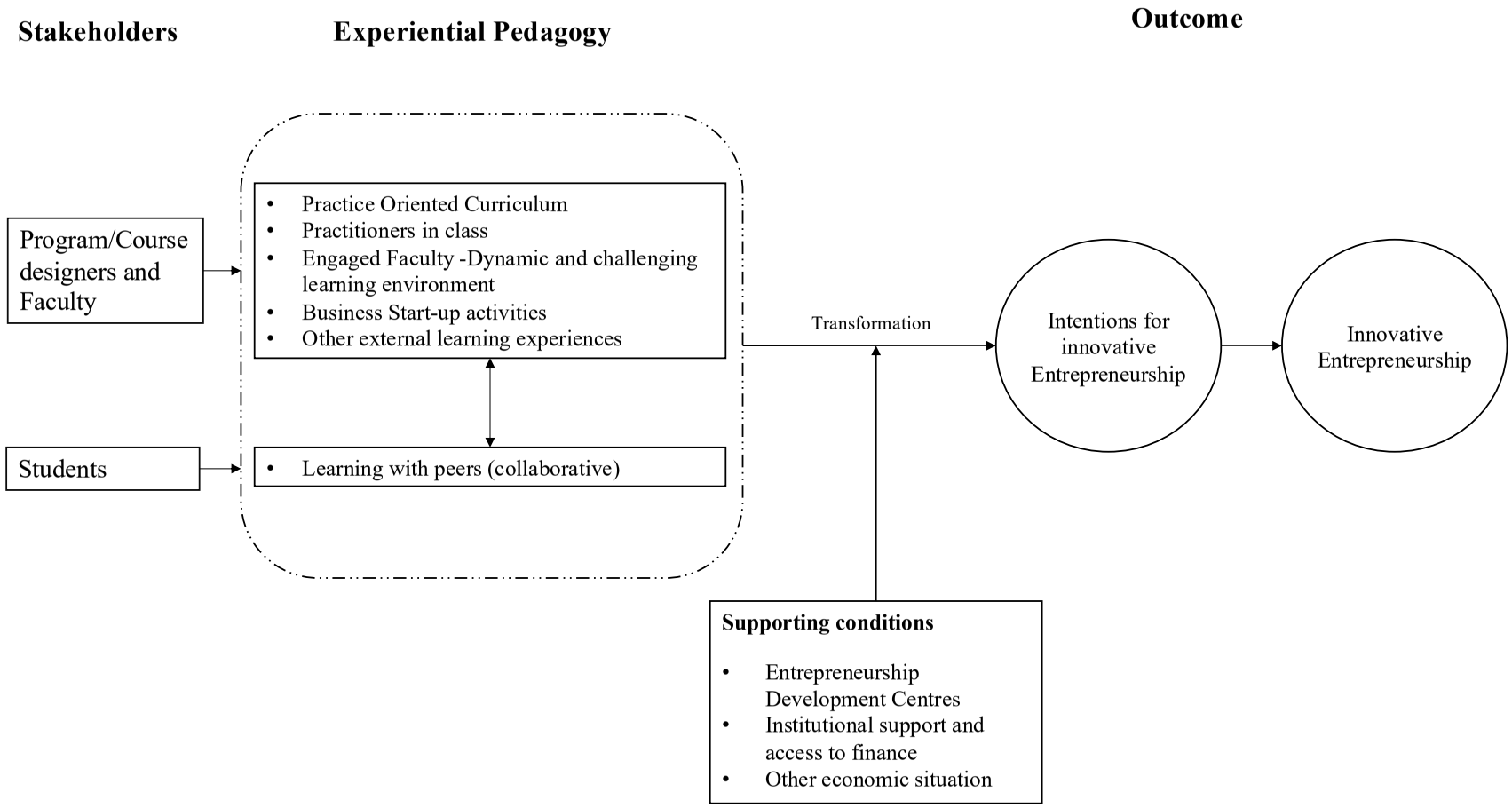


Figure 4.1: Conceptual Framework

riculum is a dynamic and effective curriculum that can help students develop essential entrepreneurial skills such as self-confidence and self-esteem (Mayhew et al. 2012). Scholars suggest curricular component should include the following: creativity, innovation, negotiation, leadership and new product development, (McMullan and Long 1987; Vesper and Gartner 1997); sources of capital (Vesper and Gartner 1997; Zeithaml and Rice Jr 1987); challenges of various stages of venture development (McMullan and Long 1987; Plaschka and Welsch 1990); intellectual property rights; ambiguity tolerance; the characteristics of an entrepreneur.

Table 4.1: Examples of Experiential Pedagogy

Pedagogy	Reference
Student business startups	Truell, Webster, and Davidson 1998; Hills 1988
Traineeships and field learning	Dilts and Fowler 1999
Behavioral simulations	Stumpf, Dunbar, and Mullen 1991
Computer simulations	Brawer 1997
Consultation with practicing entrepreneurs	Klatt 1988; Solomon, Weaver, and Fernald Jr 1994
Interviews with entrepreneurs,	Solomon, Duffy, and Tarabishy 2002
Live cases Guest Speakers and Mentors	Gartner and Vesper 1994; Souitaris, Zerbinati, and Al-Laham 2007
Environmental scans	Solomon, Duffy, and Tarabishy 2002
Business plans	Gartner and Vesper 1994; Gorman, Hanlon, and King 1997; Hills 1988; Ronstadt, Vesper, and McMullan 1988
Field trips	Klatt 1988
Use of video and films	Klatt 1988
Cases	Gartner and Vesper 1994
Class Discussion	Katz 1995

Besides curriculum, scholars recommend various pedagogical methods practices for entrepreneurship education that are consistent with experiential learning theory. Examples are listed in Table 4.1. Some

of the pedagogical methods involves co-curricular practices that take learning beyond the classroom. Scholars suggest that these out-of-class learning experiences may increase awareness of entrepreneurial career options and innovation outcomes (Mayhew et al. 2012; Neck and Greene 2011).

4.2.3.4 *Outcome*

Finally, scholars suggest, experientially based pedagogical methods can support high learning outcomes such as innovative aspirations and behavior (Mayhew et al. 2012). Hence the conceptual framework considers innovative aspirations and actions as outcomes of experiential pedagogy.

The next section discusses the method used to gather data to validate this framework.

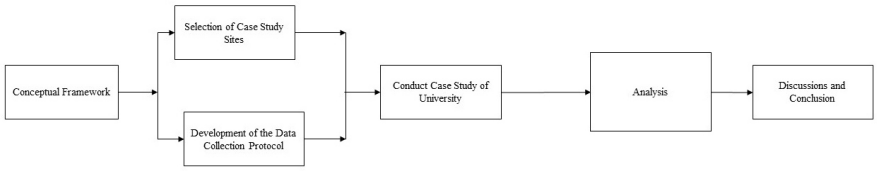
4.3 METHODOLOGY

This study adopts a single case-study approach in line with Yin (2013), Eisenhardt and Graebner (2007), and Eisenhardt (1989) recommendations. The decision to conduct a single case study was based on the necessity to gain a deep understanding and convey in-depth insights about the understudied social setting. The setting for the study is Pan Atlantic University, PAU - a private university in the south-western part of Nigeria. Detailed descriptions of the social setting so unfamiliar to management and entrepreneurship education scholars, that are vivid could be achieved better in a single case (Geertz 1973). Focusing on a single case study allows a researcher to tell better stories that may lead to better theories (Dyer Jr and Wilkins 1991). The richness of single cases, as Miles et al. (1994) argue, makes them powerful for studying processes beyond "snapshots" of "what?" or

"how many?" to just *how* and why things happen as they do; making a single case more appropriate for addressing our research question.

Besides, considering the relative novelty of innovation as an outcome of entrepreneurship education, and the paucity of conceptual and empirical work linking innovation to experiential pedagogy, we view the formulation of a priori hypotheses about the nature of the relationship between experiential pedagogy and innovation innovative aspirations and behaviors as premature. Indeed, inspired by the

Figure 4.2: Case Study Methodology



Note. Adapted from Alavi and Gallupe (2003) and Yin (2013).

spirit of grounded theory this research focused on a rich case that would allow for the identification of patterns that could lead to the transferability of the proposed theory.

Figure 4.2 is a graphical expression of the approach to this study. A similar approach was used by Alavi and Gallupe (2003). The figure indicates that the initial step in the study is the development of a conceptual framework for the present study. Following the conceptual framework, the next step involves the selection of the specific case (the data collection site) and the design of data collection protocols.

The case study was based on Pan Atlantic University - a private university in the south-western part of Nigeria. This university was not selected because they offer entrepreneurship education since all universities in Nigeria are mandated to do so; nor was it selected based on how long it has existed. Instead, the primary criterion for selection of this university was its experience from implementing teaching

practices that have been described as experiential pedagogical practices in the literature (Barbera et al. 2015; Neck, Greene, and Brush 2014; Gielnik et al. 2015; Mayhew et al. 2016). Thus, we were interested, not in the number of times the university has implemented these practices, but in how they implement them in the research setting to unpick any contextual issues.

The next section describes the selection process of the case study sites.

4.3.1 *Selection Process*

From a list of all the universities in Nigeria, the lead author identified a list of three potential universities (Pan-Atlantic University -PAU, Covenant University - CU and University of Ibadan -UI) for the study by reviewing secondary research based on literature and online searches of their websites, contacting prominent researchers, and program administrators. Next, a sample of students from all three universities was invited to a survey at the beginning of the compulsory entrepreneurship course (T1). Before using it, the survey was piloted at one of the universities with non-participating students and the feedback from the pilot test was used to clarify and to refine the wording of the questions.

The objective of the survey at T1 was to gauge the scope of experiential pedagogy used at the three potential case study institutions. We drafted the survey following the review of the entrepreneurship education literature. In line with the conceptual framework in Figure 4.1, the survey comprises examples of experiential pedagogy (See Table 4.1), examples of campus facilities (Mayhew et al. 2012), and behavioral expectation associated with intentions (Davidsson 1995;

Krueger, Reilly, and Carsrud 2000; Van Gelderen et al. 2008; Rauch and Hulsink 2015).

A total of 379 (235 in UI, 38 in PAU and 106 in CU) participants completed the screening survey at T1. The results show that of the three universities, Pan-Atlantic University uses experiential pedagogy the most with an average of 60% of the experiential pedagogy listed in Table 4.1. Pan-Atlantic University was selected on this basis.

4.3.2 *Data Collection*

We collected data from September to December 2016. To begin the process of data collection, the lead author visited the university between August and October of 2016. Each visit lasted a full day, during which we conducted in-depth interviews with 2 representatives of the top management (Director of the Entrepreneurship Center and Program leader) and a faculty member associated with the entrepreneurship course. The interview was 45 minutes long. The objective of the interview was to develop an in-depth understanding of the processes and practices associated with the initiation, development, and delivery of the entrepreneurship courses run by the university.

Following the interview with the top management, the lead author conducted (semi-structured) telephone interviews with five focus groups[7]. Each focus group consisted of 3-4 students who formed teams for the purpose of completing curricular group projects. As shown in Table 4.2 all the groups have member(s) with at least one entrepreneurial kin. Focus groups 4 and 5 comprise of students who have completed the course the previous academic year and the other three comprise of students who are currently undertaking the course. The

7 Purposeful sampling was used to for identifying and selecting information-rich participants and focus groups related to the phenomenon of interest. Specifically, *criterion* sampling strategy was used when selecting the Director of the Entrepreneurship Center and Program leader, and a faculty member, and student focus groups. Whereas *intensity* sampling strategy was used when selecting groups of students who were still undergoing an entrepreneurship course and those who had completed an entrepreneurship course.

Table 4.2: Characteristics of Focus Groups

Groups/Training Period	Focus Group Members ID	Age	Gender	Year	Entrepreneurial Kin
Focus Group 1/Ongoing	FG1A	17-19	M	2	Y
	FG1B		M	2	Y
	FG1C		M	2	Y
Focus Group 2/Ongoing	FG2A	18-25	F	2	N
	FG2B		F	2	Y
	FG2C		M	2	Y
Focus Group 3/Ongoing	FG3A	18-22	M	2	Y
	FG3B		F	2	Y
	FG3C		M	2	Y
	FG3D		F	2	Y
Focus Group 4 - Scrap Arts*/Completed	FG4A	18-22	M	3	N
	FG4B		M	3	Y
	FG4C		M	3	Y
Focus Group 5 - CDC*/Completed	FG5Q	18-22	M	3	Y
	FG5B		F	3	Y
	FG5C		M	3	Y

*Scrap Arts and CDC are name of business started by students who completed the entrepreneurship course the previous year

groups were interviewed between week 6 to week 9 of the course. The interviews were quite extensive and ranged between 60 to 80 minutes. The students provided answers to interview questions concerning curriculum, teaching and learning practices (practical activities, use of practitioners and case studies, interactions with faculty, group discussions and assessments), supporting environment (both on and off campus) that may affect how they perceive entrepreneurship (to assess changes in attitudes towards entrepreneurship), and their aspirations after their program.

To encourage sincerity and openness, strict assurances of anonymity were given to students. We attempted to mitigate social desirability bias by assuring all participants that their responses would not influence current or future grades or standing with the university. A broad interview protocol (attached as an appendix) was used to elicit dialogs about concerning curriculum, teaching and learning practices; as well as aspirations and behavioral actions (for students who had completed the course). The students were asked open-ended questions about their experiences with the entrepreneurship course, their percep-

tion of most impactful teaching practices and innovative aspirations resulting from these experiences. These questions were adapted to capture the retrospective observations, reflections, aspirations and actions of students.

To enhance validity and reliability, data for the case-study university was collected from several sources (Yin 2013). These sources included field notes from non-participant observations of classroom designs, teaching and learning facilities both within and outside the classroom; and social environment. Other documentary sources of data include entrepreneurship course curriculum; records and media reports such as university magazines; bulletins and annual reports collected during the site visits; media reports published by the university and archival materials or published by official organizations linked to higher education and entrepreneurship development within Nigeria.

Furthermore, the reliability requirement was covered using a standard protocol, with a common set of open-ended questions concerning the proposed conceptual framework.

Besides qualitative data, we collected quantitative data at the beginning and end of the course to assess whether there were changes in the behavioral exceptions associated with innovation aspirations. We used survey instrument to assess the behavioral expectations and innovation aspirations of students. The same survey that was distributed at the beginning of the entrepreneurship course (T1) was distributed at end of the course (sample size of 38) to assess whether there were changes in the behavioral exceptions associated with aspirations. The behavioral expectations were assessed using a single item suggested by Davidsson (1995), and adopted in Rauch and Hulsink (2015): "How likely do you consider it to be that you will be running your own firm within five years from now?" The respondents indicated the likelihood between 0 and 100.

At the end of the course, students were asked to list the kind of businesses they aspire to create in the future. To assess the innovativeness of their potential businesses, students were asked to peer-review their ideas by rating them on a scale of 1-10: where 1 is *"not innovative"* and 10 means *"very innovative."* This approach was used because in a study on predicting the success of novel ideas, Justin Berg find that peers were most accurate in evaluating the potentials of novel ideas than any other group of reviewers. Peers were twice as accurate as experts in predicting the potential success of novel ideas (Berg 2016). In other words, peer evaluation is more accurate than *expert* ratings (Grant 2017; Marty, Henning, and Willse 2010).

At the completion of the data collection, the audiotapes of the interviews were transcribed[8] and all the qualitative data was compiled. Next, a detailed profile of the compulsory entrepreneurship course at Pan-Atlantic University was developed. Once a detailed case study of PAU was developed the data was analyzed using the qualitative data analysis computer software package NVIVO.

4.3.3 *Data Analysis*

Data analysis was multifaceted and involved iterative coding of abstract categories. Using open coding strategy, we scanned transcripts, identified key concepts and organized data into distinct categories (Strauss and Corbin 1997).

The coding analysis was initially guided by our conceptual framework, which suggests that stakeholders develop, organize and deploy experiential pedagogical practices; and that experiential pedagogical practices may support innovative outcomes. Recalling our research question, we were particularly interested in finding how pedagogy relates to innovative entrepreneurship in a resource constrained envi-

8 The interview generated a total of 36 pages with 19,597 words.

ronment. Accordingly, we were particularly interested in the following: (a) exploring experiential pedagogy; (b) effect of resource constraint or supporting conditions; (c) outcome.

Regarding the experiential pedagogy element, we began by conceptually ordering the accounts of students into broader, more abstract categories. The underlying data structures behind these categories are shown in Figure 4.3. First, eight broad experiential pedagogy categories which were supported by seventeen quotes where identified. The eight categories are, (1) design thinking, (2) raising capital, (3) opportunity identification, (4) dynamic and challenging learning environment, (5) concrete experiences from practitioners in class, (6) peer learning, (7) business startup activity, (8) other external learning activities. Further exploration of how the eight categories are related led to the broader abstraction of the categories into four as shown in Figure 4.3: (1) practice-oriented curriculum, (2) Engaged Faculty, (3) Student Engagement, (4) Out-of-Class Experiences.

Seven quotes emerged from the data that were at first, intuitively difficult to categorize because they seemed related to experiential pedagogy but could not be categorized as pedagogical practices. Interpretations of these quotes were that they suggest key transformational experiences linked to experiential pedagogy. We categorized these quotes into *self-reflection* and *emotional trigger.* Figure 4.4 shows the data structure behind these two categories which we further categorize as *transformation through reflection.*

The data also reveal two categories related to resource constraint/-supporting conditions: (1) concern about economy, (2) Institutional Support and access to Finance. These categories and their underlying data structure are presented in Table 4.5.

Regarding outcomes, we identified two categories: (1) Cognitive Outcome, (2) Behavioral Outcome. Interpretations of both categories, we

argue, demonstrate innovative aspirations and innovative behavioral tendencies. The underlying data structures behind these categories are shown in Figure 4.6.

Following the examination of the data, we argue that the interrelations between the emerging themes and concepts that help to understand the underlying processes that link the entrepreneurship course to innovative entrepreneurship are consistent with our conceptual framework (see Figure 4.1).

4.4 FINDINGS AND DISCUSSION

The main objective of this study is to explore the links between experiential pedagogy and innovative entrepreneurship in a resource constrained setting by examining the effectiveness of experiential pedagogy applied in entrepreneurship education in a developing country. This objective is in line with the research question: How does experiential pedagogy relate to innovative entrepreneurship? The study is based on a private university in Nigeria where students undertake practice-oriented entrepreneurship education. Following a summary of the case studied, the findings and discussion are presented in relation to the conceptual model. The data structures behind experiential pedagogy and outcomes regarding innovative aspirations are shown in figure 4.3 and figure 4.6 respectively.

4.4.1 *Pan-Atlantic University*

Pan-Atlantic University (PAU) is a private university that is located in Lagos, Nigeria, a city that is largely Westernized and economically vibrant. The campus's scenery is characterized by green landscape and buildings with teaching facilities analogous to western universities.

The university started with seminars in 1991 and commenced a Chief Executive Program in 1992. In 2014, PAU launched its under-

Entrepreneurship I			
Timeline	**Topic**	**Curriculum**	**Pedagogy**
Week 1	Entrepreneurial Journey; Effective teams	Provide theoretical foundations to entrepreneurship and team work	Structured Lectures, and group discussion
Week 2	Opportunity Recognition; Idea Generation	Explain the concepts of identifying or creating new opportunities; tools and strategies for creating or identifying new Ideas	Structured Lectures, and group discussion and case study
Week 3	Setting up your business; Live Case	Focuses on choices and analysis of opportunity; solving critical and practical problems that pertain to start-up phase of business creation	Structured lecture and Guest speaker who is a practicing entrepreneur
Week 9	Market Research	Defines the process of identifying your target market, preparing to enter the marketplace and how to communicate value to your customers. Understanding the market and how to create solutions that are relevant to market; Customer needs and strategies for penetrating the market as well as challenges of marketing a product or service; Developing a marketing plan	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 4	Design Thinking; Group Meeting	Focusing on creativity and problem solving and how to apply them in real life cases	Structured lecture. Collaborative learning, Student collaborate to design a tower with marshmallow, spaghetti sticks and threads
Week 6	Concept to Market; Group Meeting	Focusing on the challenges of bringing a new concept to the market and how to negotiate around such challenges. The role of branding and how to differentiate oneself	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 7	Raising Start Up Capital; Presentation	Understanding the various sources of capital and Bootstrapping lessons for starting a business with little capital; Benefits and drawbacks of bootstrapping. Exploiting the networks or an entrepreneur to generate start up capital	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 8-9	Pitching Skills	Presenting ideas to investors, lenders, and customers in a clear, concise and convincing way	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 10	Disruptive Innovation	Understanding various theories of Innovation. The potentials of innovation and dangers of not innovating.	Structured lecture. Collaborative learning, With case study discussion and analysis
Week 11	Business Model Canvas; Group Meetings	How to organize your business, protect your ideas, and communicate them to others. a) IP Management; b) Business Model Canvas. Various Revenue generation mechanisms.	Structured lecture, Case study method and group discussion
Week 12	Entrepreneur Live Case	Seminar: The guest speaker chooses a topic and engages with the students	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 13	Sales & Marketing	Market Communication; Idea to Market; Sales; Negotiation; Various sales strategy; How small business can leverage cheap and available means to sell and market their goods	Structured lecture. Collaborative learning, With case study discussion and analysis
Week 14	Entrepreneur Live Case	Seminar: The guest speaker chooses a topic and engages with the students	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 15	Pitching	Assessment	

Table 4.3: Course Timeline, Content and Teaching Methods (I)

graduate programs. The first programs were 4-year B.Sc. programs in accounting, business administration and media & communication. Two more programs, B.SC. in Economics and B.Sc. in Information, Science and Media Studies (Digital Media) were added in 2016[9].

Pan-Atlantic University has a student population of 757 and a student to staff ratio of 11:1 (PAU 2017). Their aim is to empower

9 Students were not enrolled on this course at the time of this research

Entrepreneurship II (Business Start-Up with $250 seed capital)			
Timeline	**Topic**	**Curriculum**	**Pedagogy**
Week 16	Financial Management	How to organize your finances. a) Budgeting/Financial Planning. Other Basic accounting concepts, such Cashflows and balance sheets	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 17	Managing Operations	Outlines a company's organizational structure, how to recruit and manage talent,	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 18	Ethics; Group Meetings	Focus on ethical concerns of entrepreneurship	Structured Lectures, and group discussion and case study
Week 19	Social Enterprise; Group Meetings	Theories of Social entrepreneurship and how to identify social problems	Structured Lectures, and group discussion and case study
Week 20	Meet the Lenders	As the title suggests, students have a chance to interact with investors representatives from banks who share what they look for in a business idea and plan and how they know which ones will thrive or succeed	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 21	Legal; Taxation	Focuses on the legal environment and regulations that affect the running of a business	Structured Lectures, and group discussion and case study
Week22	Live Case; Group Meetings	Seminar: The guest speaker chooses a topic and engages with the students	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 23	Business Plan	Lesson on how to write a business plan	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 24	Business Clinic	Mentoring sessions for students groups	Collaborative learning, students work in groups. Faculties guide students
Week 27	Live Case for each group	Seminar: The guest speaker chooses a topic and engages with the students	Guest Speaker/Practicing entrepreneur. Interactive session with participant-centred learning
Week 28	EXPO Preparation	Final preparations for showcasing their business ideas, products or services.	Collaborative learning, students work in groups, on their business start-up Faculties guide students
Week 29	**EXPO**	A day for student groups to exhibit their business, products and services to members of the public. They are expected to make sales on that day.	Student Showcase their Business Start-up.
Week 30		**Exam Preparation**	

Table 4.4: Course Timeline, Content and Teaching Methods (II)

students with skills for the global marketplace. A practice-oriented entrepreneurship course curriculum and pedagogy within and outside the classrooms (in what they refer to as Real Learning), is part of their strategy to achieve their aim of empowering students.

The entrepreneurship course utilizes practice-oriented pedagogy with active, collaborative and participative learning philosophies such as the use of case studies and collaborative group work. Accordingly,

guest speakers, some of whom are practicing entrepreneurs and directors and CEOs of multinational companies are often used in the classroom as part of what they refer to as Real Learning. For instance, the Managing Director of Coca-Cola Nigeria Limited, visited PAU in 2016 to give a seminar on business leadership to the students of the School of Business Administration during one of their entrepreneurship classes.

All second-year students are required to complete the entrepreneurship course over both first and second terms. The average class size is 40. This entrepreneurship course takes place through the first and second semester of the second year. As shown in Table 4.3 and Table 4.4, from week 1 to 14 the course covers theoretical knowledge about entrepreneurship through topics including idea recognition/creation, innovation, creativity, market research, capital, business startup, sales e.t.c. From week 16 - 19, students form and work in groups of six to ten members. Each group is given a seed capital of approximately $250. They are expected to start their businesses, open bank accounts, mobilize additional funds and run their business throughout the semester. In week 30 all the business participates in a one-day exposition which is opened to the general public. At the end of the semester, the businesses are expected to be officially liquidated, the seed capital returned to Entrepreneurship Development Center (a center within the university dedicated to the development of graduate entrepreneurship) and the profit donated to a charity of their choice or used to improve the community around the University. Groups are expected to break even, at least. As part of the course, a report is submitted by each group focusing on how they have been able to use entrepreneurial principles learned in the first semester. More importantly, the report expects them to reflect upon their actions and describe what they have learned during their entrepreneurial journey.

Outside the classroom, students can join groups such as *The Entrepreneurship Club*. The club started in the summer of 2016 and is an environment for students to discuss matters on graduate entrepreneurship and to impart knowledge on others who are yet to undertake the entrepreneurship course. Also, students have access to the Entrepreneurship Development Center - a center whose mission is to provide holistic business development and support services to small and medium enterprises (SMEs) in Nigeria.

Students quotes	Corresponding pedagogy
"use real–life cases or real–life situations." "based on real–life situations, things that have happened. [...] a way of bringing real life to the classroom."	Case studies
"real people who started real businesses"	Practitioners are lecturers and guest speakers
"adopting new age technologies. It's [...] a more interactive kind of method"	Videos & films, blogs & social media, and online web-based assignments
"practical ways of how [theories are] actually applied in real life"	Business startups, internships, and field trips

Table 4.5: Students Examples of Experiential Pedagogy

4.4.2 *Stakeholders*

In PAU, director of the Entrepreneurship Development Center, course leaders and staff members involved in entrepreneurship education are considered the stakeholders for this study. School director and course leader ensure that their curriculum and pedagogy are designed to complement each other and prepare students for the opportunities and challenges that are specific to the Nigerian context. As the director —who is also the principal developer of the entrepreneurship course stated in an interview:

> Program Director: "*We did not copy our course design from any university. We had to create our own. You have to remember that in developed countries, there are multiple support systems for student entrepreneurs that don't exist here in Nigeria. Banks are hostile and skeptical of giving students money for business, without a fully functional business. No one will want to invest in [students]. There is little or no support from the government. There are weak institutions and infrastructures to support business growth, and there is a recession. With all these in mind, we had to design a course that will prepare students for the real world in Nigeria.*"

By this comment, the director suggests that the curriculum and pedagogy used in the entrepreneurship course is contextualized according to the environmental and economic realities in Nigeria. As discussed previously, doing business in Nigeria is challenging (Schwab et al. 2000; Bank 2018) due to institutional and infrastructural voids. Thus contextualizing entrepreneurship curriculum and pedagogy, we submit, implies identifying situational constraints and opportunities that affect the occurrence of innovative entrepreneurship and adapting the entrepreneurship course to compensate or exploit those constraints or opportunities respectively. To some extent, the comment of the director highlights the significant role of the stakeholders in inspiring innovative entrepreneurship. However, there is more at work here. The comments echo Johns (2006) argument that context affects organizational behavior and management researchers should highlight such effects in their studies.

4.4.3 *Experiential Pedagogy*

Based on the conceptual framework, experiential pedagogy[10] involves practice oriented curriculum and pedagogical practices grounded on experiential learning theory. Such pedagogical practices, unlike traditional lecture centered pedagogy encourages *experimentation* and *reflection* to develop skills and behaviors needed for entrepreneurship (Dhliwayo 2008; Jones and English 2004). This section presents and discusses the evidence in support of practice oriented curriculum and pedagogical practices grounded on experiential learning theory.

4.4.3.1 *Curriculum and Pedagogy*

Scholars suggest that dynamic curricular components should include: innovation, negotiation and leadership (McMullan and Long 1987; Vesper and Gartner 1997); sources of capital (Vesper and Gartner 1997; Zeithaml and Rice Jr 1987); challenges of various stages of venture development (McMullan and Long 1987; Plaschka and Welsch 1990); assessment and out of class activities (co-curricular opportunities) (Mayhew et al. 2012). As shown in Table 4.3 and Table 4.4, most of the curricular components and pedagogical methods of entrepreneurship education at PAU are contextualized and consistent with experiential learning theory. For instance, student report that through the design thinking class, they learned how to "FG2C*: think outside the box and to design with little resources.* "

Perhaps one of the most important curricular components, especially relevant in developing countries, is *bootstrapping* — starting a business with little capital. This is relevant more so because access to capital is one of the major challenges of startups in developing countries such

10 From students standpoint, experiential pedagogy "FG3A: *improves on the weaknesses of conventional teaching practices [by conventional teaching methods they imply a lecturer-centered approach to learning in the classroom] in other to make learning better.*" Another student explains further: "*...So it is not enough for the lecturer to come and just state 'this is how you do it' or right on the board, but getting the students engaged in what they are learning.* FG4B" Students gave the examples of teaching practices that are consistent with experiential pedagogy listed in Figure 6.2 as shown in Table 4.5.

as Nigeria (Bank 2018; Bank 2012b). To explain the impact, a student stated that through the *bootstrapping* activity they learned "FG3B: *how to pitch well [and] to generate funds*" through various means including crowdfunding and pitching to investors.

Besides bootstrapping, students gave other examples of teaching practices, shown in Table 4.5, which are consistent with experiential pedagogical methods suggested in the literature (shown in Table 4.1). One of the teaching practices that students reported to be valuable is business startup. At PAU, student teams are offered seed capital of about $250 to start a business as part of the entrepreneurship course. At the end of the course, they showcase their businesses during a one-day exposition for members of the public to see and interact. At the time of writing, one of the groups who showcased their business at the exhibition in 2016 still trades. When asked about their thoughts on business startup exercise, one of the students explains the impact this way:

> "FG5C ... *in the course of doing [business startup] we found out some things, learned new things, and we [...] found out that there can be much profit in [the] business if we played the cards right. It [...] helped us to experience what we were [...] taught in class: the importance of market research for example [...] we saw that the market research that we did not do properly could affect business performance.*"

90% of the students in all five focus groups used the term *experience* or a variation of it when describing the impact business startup activity had on them. One past student of the entrepreneurship course explains the impact of business startup activity as follows:

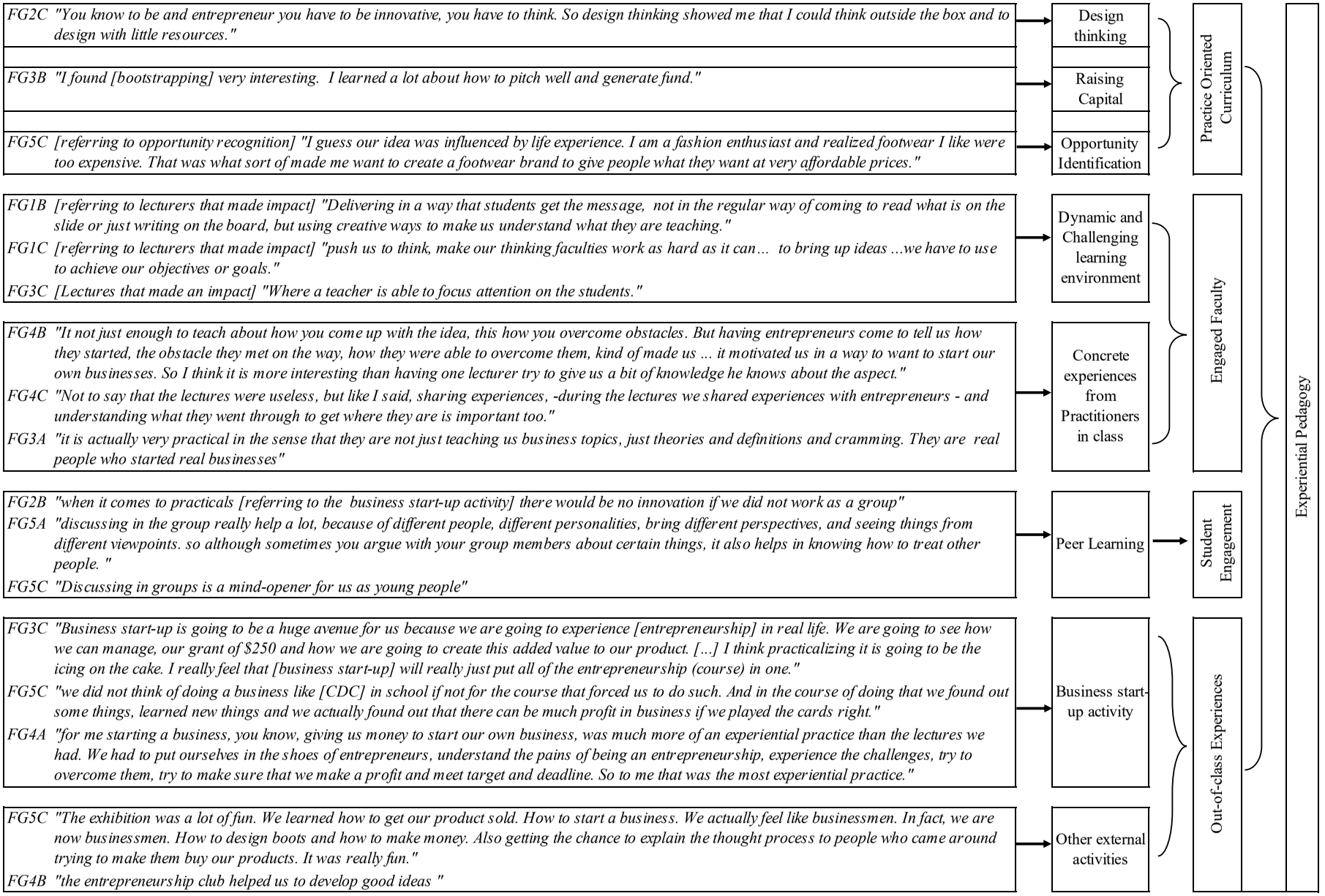


Figure 4.3: Data structure Behind Experiential Pedagogy

> "FG4A ...*we had to put ourselves in the shoes of entrepreneurs, understand the pains of being an entrepreneur, experience the challenges, try to overcome them, try to make sure that we make a profit and meet target and deadline. So [...] that was the most experiential.*"

By *experiential* here, the student implies opportunities for *experimentation*. *Experimentation* is a cardinal of experiential learning theory. Experimentation relates to putting knowledge into practice. Pedagogical methods that are consistent with experiential learning theory include the following: business plan exercise case study analysis, group discussion, use of practitioners as guest speakers in class and out of classroom experiences such as student business startup Neck, Greene, and Brush 2014; Mayhew et al. 2012; Solomon and Matlay 2008; Solomon, Weaver, and Fernald Jr 1994; Neck and Greene 2011. However, student business startup is considered as a more experiential pedagogical method than others listed above because it provides the opportunity for more extensive practical experiences, reflection, and skills acquisition (Bae et al. 2014; Solomon, Weaver, and Fernald Jr 1994). Consistent with this submission, all the participants interviewed for this study described the startup activity as the most exciting part of the course. Perhaps the expression of satisfaction might help to explain why all participants of this study find the course interesting despite being compulsory. One of the students who were yet to participate in startup activity stated:

> "FG3C: *Business startup is going to be a huge avenue for us because we are going to experience [entrepreneurship] in real life. We are going to see how we can manage, our grant of $250 and how we are going to create value, [...] how we can acquire*

> *a competitive edge. So I think practicalizing it is going to be the icing on the cake. I really feel that starting up will really just put all of the entrepreneurship course in one. [...] they have taught us about pitching your ideas, working in groups, legal aspect everything we have learned so far, all those come together in the business startup. "*

This finding is consistent with Neck and Greene (2011) who state that student startup is arguably the highest form of apprenticeship that can be included in an entrepreneurship course. Startup activities allow students to experiment with their business ideas and reflect on the outcomes and ways to improve on them. However, more may be at work here. Startup activities provide opportunities to *learn by doing* which may lead to the emergence of practical (tacit) knowledge. Practical knowledge integrates experiential knowledge, formal knowledge, and personal beliefs (Van Driel, Beijaard, and Verloop 2001). Drawing on the seminal work of Van Driel, Beijaard, and Verloop (2001), practical knowledge is invaluable for two reasons. First, it is affected by an individual's concerns about their context and environment. Thus, practical knowledge is *person- and context-bound* as it is adapted to a local context which includes opportunities and challenges that may vary considerably across countries. Second, practical knowledge is mainly implicit or tacit which implies that one may find it difficult to articulate their practical knowledge: they are more in a "*doing*" environment than in a "*knowing*" environment.

In addition to practical knowledge, the practical experiences gained from startup activities help students to develop high self-efficacy (Peterman and Kennedy 2003; Ajzen 1985; Shapero and Sokol 1982). Self-efficacy (which influences perceived behavioral control) is an essential antecedent of intention for entrepreneurship (Autio et al. 2001;

Peterman and Kennedy 2003). One can deduce, therefore, that business startup activities influence students' aspirations for entrepreneurship.

Besides startup activities, the use of practitioners in class is considered an important pedagogical technique that may help inspire students aspirations for innovative entrepreneurship (Souitaris, Zerbinati, and Al-Laham 2007). At PAU, practitioners deliver 50% of the curriculum for the entrepreneurship course. Students found lectures delivered by practicing entrepreneurs to be more valuable because they shared examples from what they experience in their daily operations. Some students used terms such as *motivated* and *inspired* (e.g., "FG2B: *[we were] inspired in a way to want to start our own businesses*") to describe the feelings triggered by practicing entrepreneurs. In other words, practicing entrepreneurs inspire students. One student describes the impact of a lecture delivered by the chief executive officer of an animation company in Lagos, Nigeria:

> "FG1C: *Before the class, we did not think there was an animation company in Nigeria, because most of the cartoons we watch were [Western characters]. They are not Nigerian content. [...] we were surprised, happy and inspired. Her company had this particular project [...] with Adidas. I was like, a Nigeria company doing, collaborating with [...] one of the top [...] brands in the world was amazing and really impressive. [It] gave us greater idea of what we could do [and] a different perspective of what we think about innovation.*"

In the statement above, the student describes a spark of inspiration following a workshop delivered by a practitioner. As Souitaris, Zerbinati, and Al-Laham (2007) note, inspiration (a construct with an emotional element) is an influential benefit of entrepreneurship education be-

cause it raises attitudes and intentions for entrepreneurship. Other statements that support the spark of inspiration are shown in Figure 4.4. Although implicit, the statements in Figure 4.4 suggest that students engage in reflective observations following experiences they are exposed to either through business startup, classroom activities or practitioners guest speakers. Reflection is another cardinal of the experiential learning theory for transforming experiences. We argue that the statements regarding reflection and spark of inspiration constitute evidence of the *transformation* of students' understanding and indicates nurturing of innovation.

All the participants of our study expressed a positive attitude towards entrepreneurship as exemplified by this statement:

> "Fg4A: *Doing a course like this opens your mind to other ideas that also relates to your career path in some way; it exposed me to a lot of possibilities.*"

On the whole, the findings discussed indicate that on average, experiential pedagogy (business startup and practitioner guest speakers) can transform student attitude and stimulate aspirations entrepreneurship. The findings are consistent with the result of the National Survey of Student Engagement showing that experiential pedagogy has a high impact on students learning and retention (Kuh 2008). However, it contradicts Arranz et al. (2017) which find that out-of-class activities decrease the capacity to start a business. Arguably, one explanation for the positive response to entrepreneurship education is that the students may have *apriori* interest in entrepreneurship because of their entrepreneurial kin(s).

Based on the proceeding discussion, we propose

Proposition 1: Experiential pedagogy will raise the aspiration of students for entrepreneurship

4.4.3.2 *Student Engagement*

Another element of experiential pedagogy relates to student engagement. At PAU students often work together and learn in groups. For instance, they discuss and analyze case studies, work on class exercises (e.g., presentations) in groups.

Psychologists have widely researched and advocate for collaborative learning, the grouping and pairing of students for achieving an academic goal. The term *collaborative learning* refers to an instruction method in which students at various performance levels work together in small groups toward a common goal. The students are responsible for one another's learning as well as their own. Thus, the success of one student helps other students to be successful (Gokhale 1995). According to Vygotsky (1980), students perform at higher intellectual levels when asked to work in collaborative situations than when asked to work individually. Gokhale (1995) report that students who participate in collaborative learning perform significantly better on the critical- thinking test than students who study individually.

It should be noted that the claims of the merits of collaborative learning are simplistic because they do not address the ethical dilemmas in *collaborative learning*. Students experience different levels of a perceived threat when working in groups which can impact their overall learning experience. So, the more students see the learning activity as profoundly threatening to a sense of self, the more likely they will disengage (Dean and Jolly 2012). Also, in most cases, students do not contribute equally to a group task which may reduce the group's

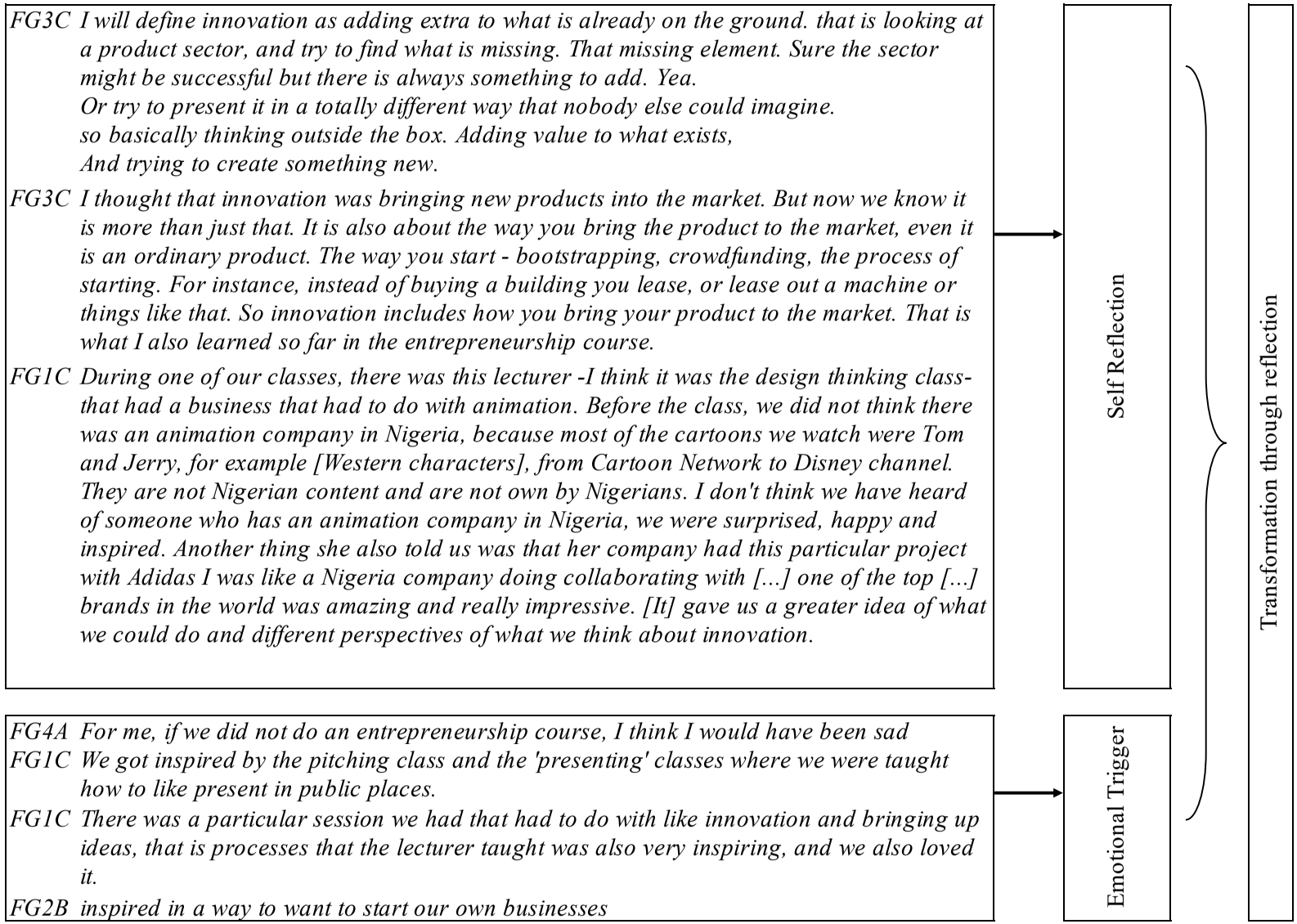


Figure 4.4: Data Structure behind reflection

average performance. One student described the challenges of group work as follows:

> "FG5A: *It was quite difficult. There were times it was frustrating. A lot of people are very hard to work with. During meetings, for example, some will come 20-30 minutes late or some will not even come at all, or even inform [anyone] of their absence. [...] you just have to realize that [...] some people in your group may not put in as much effort as you.*"

Moreover, there are the challenges of embedding *collaborative learning* practices in lecture-based classes which are quite predominant in Nigeria. This latter point does not apply to PAU due to the small class size. Nonetheless, it is relevant.

In addition to collaborative learning, interactions with faculty and the use of challenging assessments that require problem-solving have been linked to innovative outcomes (Mayhew et al. 2012). At PAU students have several opportunities to interact with faculty, and assessments require students to apply theories to practical problems.

4.4.4 *Supporting Conditions*

As suggested in the framework, critical infrastructure within and around the university, as well as institutional frameworks, may be necessary conditions for nurturing innovative behaviors. Table 4.5 shows the data structure behind supporting conditions that may affect innovative behaviors.

PAU has buildings with spaces for students to network and brainstorm with high-speed internet access. The university also has an

Entrepreneurship Development Center[11] which supports students with entrepreneurial ideas may also drive innovative entrepreneurship among students and graduates. Physical space where like-minded students can meet can inspire creativity and innovation in a way that may lead to innovative entrepreneurship. Thus, besides the curriculum and teaching technique used in an entrepreneurship cours*e*, supporting conditions within the university-environment is another ingredient for inspiring innovation.

Beyond university-environment, national and economic conditions can also influence development of entrepreneurial intentions, broadly, and innovative aspirations, specifically. Students in our study suggest taking the economic situation and perceived lack of access to capital in Nigeria into account when considering how soon they plan to start an entrepreneurial career. For instance;

> *"FG3B: One day I might decide to start my own company. But am not think about starting my company right now. A reason why I am not there yet when it comes to starting entrepreneurship is that was listening to the radio the other day and a lady was talking about how the government is not making life easy for her. She has a business of her own baking cakes. The government is not supporting her; the bank did not give her the loan that she wants. Nobody is pushing with her."*

To the extent that students were concerned about lack of government support and access to loans, the statement above echoes Chaux and Haugh (2014) point that institutional voids can pose barriers to the development of entrepreneurial intentions.

11 Entrepreneurship Development Center "provide(s) technologically based skill training that ensures students understand how their expertise fits into improving the society" (Nigeria 2013)

Surprisingly, we also found, like Liu (2011) notes, that students perceived that the economic situation and consequent resource constraint can offer potential opportunities to create innovative business models. The following quotes elucidate this point:

> "FG3A: *I think this is the best time to make money in Nigeria. Because right now everything is hard and there is no money anywhere"*
>
> "FG3C: *This economic situation can be a good thing or a bad thing. Because when prices go up like this, it helps people to look for cheaper means of doing things. It forces businesses to use more cost effective methods. It makes everyone to be more economical, try to minimize costs and inspiring innovations."*
>
> "FG1B: *It is unfortunate that Nigeria is in a recession right now. Most banks are skeptical about giving loans right now ... But for most businesses all you need is just good ideas ... not necessarily need a lot of capital. I still think that during the recession, one can still startup a company."*

To some extent, these statements suggest, undermine the notion that institutional frameworks can play important role in shaping a national innovative capacity by determining human capital investments and creating incentives for innovation (Saint, Hartnett, and Strassner 2003), that resource constraint can offer opportunities to create innovative business models (Liu 2011).

4.4.5 *Outcome*

The findings affirm that experiential pedagogy can support aspirations for innovative entrepreneurship. First, students' comments

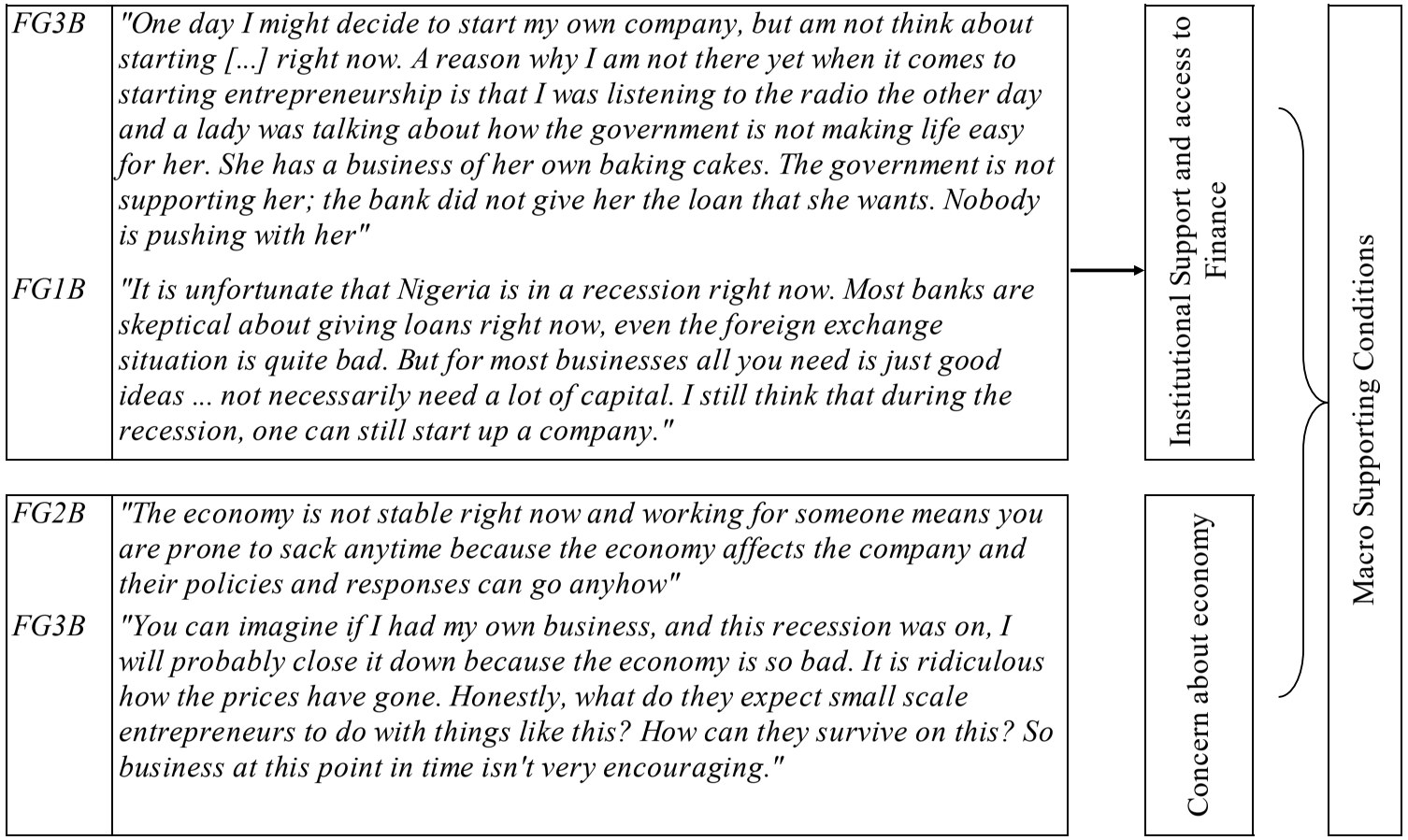


Figure 4.5: Data Structure for Supporting Conditions

suggest an evolution in their understanding of innovation through the entrepreneurship course. A student, for example, described the impact of the entrepreneurship course on their innovation mindset as follows:

> "FG3C: *I thought that innovation was [about] bringing new products into the market. But, now I know it is more than just that. It is also about the way you bring the product to the market; even it is an ordinary product. The way you start - bootstrapping, crowdfunding, the process of starting [...] so innovation includes how you bring your product to the market. That is what I also learned so far in the entrepreneurship course.*"

Implicit in this statement is a perception that innovation in entrepreneurship is not only about commercializing new products but also in transmuting the value of existing products. This point is consistent with Drucker (1985) argument regarding the nature of innovation and indicates the development of an innovation mindset.

More specifically, there is evidence of the formation of aspirations for innovative entrepreneurship among Focus Group 1-3 (students who were undertaking the entrepreneurship course at the time of our research) as manifested by the following expressions:

> "FG3A: *I have a couple of ideas for innovative ways of advertising that I haven't seen anywhere.*"
>
> "FG1A: *I still have the same goals and targets and objectives, but the course has taught me how to achieve them in better ways.[...] and I will like to own a technology company, a Nigerian technology company where I will make laptops, tablets, phones, watches and other things.*"

> "FG1B: *I thought about [...] a video game company in Nigeria. When I thought about it I realized that Nigeria doesn't have the technology required to actually achieve something like that [...] because nobody has tried it before so I feel that if everything goes my way I may be actually able to start such [a company].*"

These expressions, we argue, indicate the development of innovative capacity and aspirations for innovative entrepreneurship. For one thing, the statements (e.g. "FG3A: *I have a couple of ideas for innovative ways of advertising")* suggest a plan to bring new products and services to the market at a future time. For another, the expressions ("FG1A: *to achieve them in better ways.*") suggest an understanding that innovative entrepreneurship is not just about bringing new products and services to the market but also *transmuting value*.

Specifically, an example of this transmutation of value involves Focus Group 4 which comprise past students of entrepreneurship course who created a business named Scrap Metal. As a of the members of this group stated,

> "FG4A: *the idea was to take scrap materials, things that people generally dispose of and use it to create artworks, such as clothing and accessories. And also promote other artists who [...] take scrap material to create artworks for decoration. [...] we took scrap fabric from tailor workshop and used it to create designs on t-shirts. ... apart from what we created ourselves our intention is to help promote artists who made art from disposed materials.*"

The student here expresses transmutation of value by transforming scrap materials — *"things that people generally dispose of"* to more valu-

able products "such as clothing and accessories" that customers are willing to pay for. The activities of this group are consistent with Drucker (1985) definition of innovation and, we submit, represent an example of innovative capability. Notably, student colleagues described the products of Scrap Metal as creative and innovative. At the time of writing, the business is still in operation.

In addition to the evidence from qualitative data, the results of quantitative data show that (a) the behavioral expectation to start a business within 5 years of graduation increased from 55% (at the start of the course) to 59% at the end of the course which implies stronger conviction for entrepreneurial career (b) Peer-evaluation of students business ideas at the end of the course shows that the average score of the innovativeness of potential behavior was 6.8. This score implies that students' aspirations were 68% innovative. As peer evaluation can be considered highly accurate (Grant 2017) the score of 68% can be considered a significant indication that a potential entrepreneurial venture will be innovative.

The evidence from our quantitative data indicates that students are 59% likely to start their own business in the future after completing the entrepreneurship course and that such a business has a 68% chance of being innovative.

Triangulating the evidence from qualitative and quantitative data, our study shows that experiential pedagogy can support the nurturing of innovative aspirations within entrepreneurship education; we, therefore, propose that:

> *Proposition 2: Experiential pedagogy raises innovative aspirations and increases the likelihood of innovative entrepreneurship*

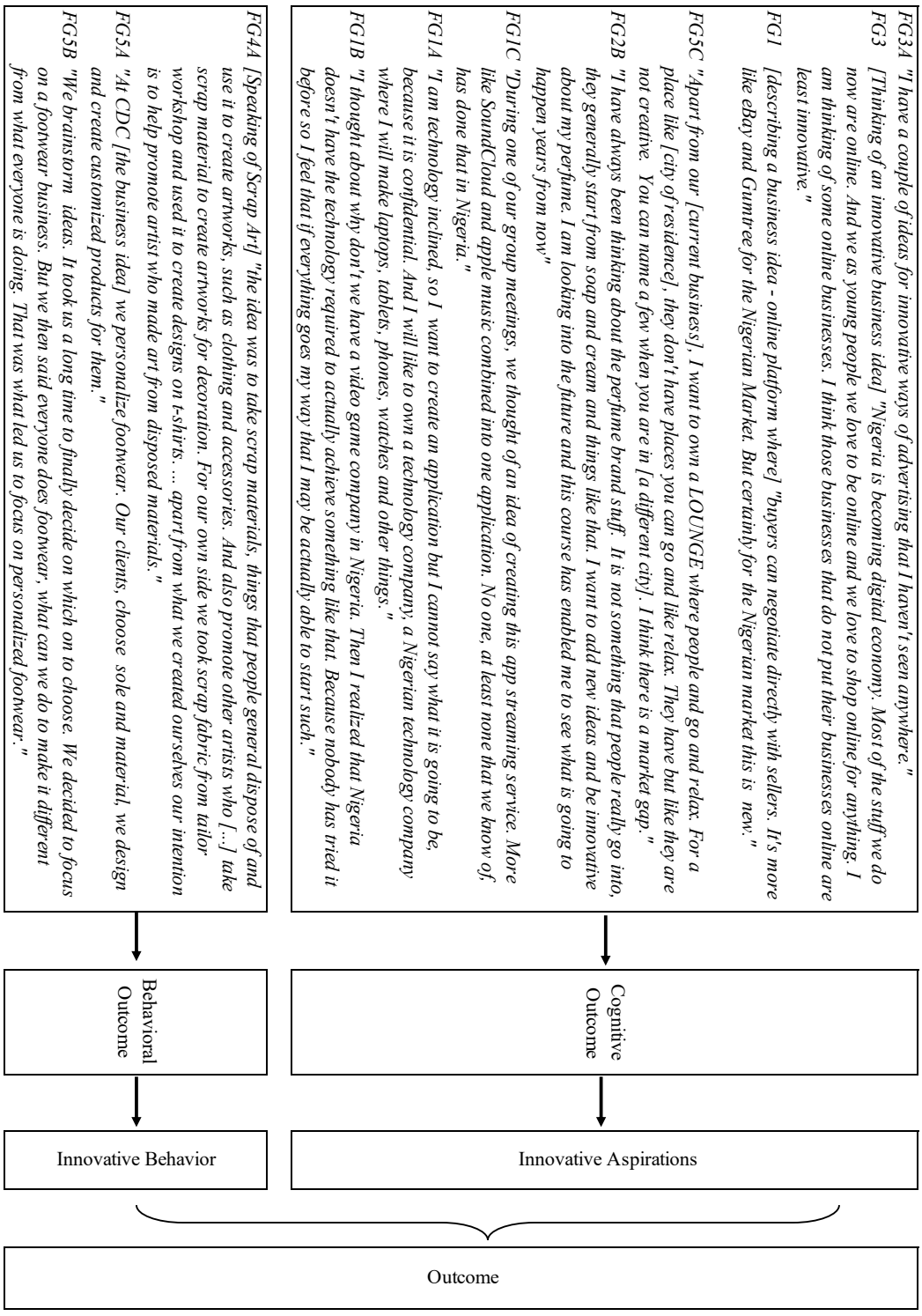


Figure 4.6: Data Structure Behind Outcome - Innovative Aspirations

4.5 CONCLUSIONS

The primary motivation of this article is to investigate how experiential pedagogy applied in entrepreneurship education in a resource constrained setting links to innovative entrepreneurship. In the main, the results from a resource constrained environment, show that experiential pedagogical methods such as business startup can inspire aspirations for entrepreneurship, in general, and innovative entrepreneurship in particular. Experiential pedagogical methods provide the opportunity for experimentation and reflection which enhances not only understanding of entrepreneurship process from ideation to venture creation but also inspires attitude, perceived feasibility, innovation mindset, and affinity for an entrepreneurial career. The findings have several theoretical and practical implications.

First, this article contributes to innovative entrepreneurship theory by providing evidence that experiential pedagogy is linked to innovative entrepreneurship. The findings are consistent with Mayhew et al. (2016) by showing that out-of-classroom activities such as business student startup can inspire innovative intentions because they present opportunities for juxtaposing the theoretical with the practical, the hypothetical with the pragmatic, the problem with the solution. Our study extends Mayhew et al. (2016) by providing evidence of innovative entrepreneurial activities that can be traced to experiential pedagogical practices applied in entrepreneurship education. In other words, this study provides evidence that innovative entrepreneurs can be nurtured in business schools when experiential pedagogy is applied in entrepreneurship education. The evidence is encouraging for scholars who are interested to gain knowledge about how higher education can influence innovative entrepreneurship (Mayhew et al. 2012; Baumol, Schilling, and Wolff 2009). However, the findings here

contradict Arranz et al. (2017) who find that out-of-class activities decrease the capacity to start a business. One explanation for this difference may be due to the application of business startup activitities which is considered a highly experiential pedagogy (Neck, Greene, and Brush 2014).

Second, the study contributes to Kolb's (1984) experiential learning theory by providing evidence of the effects of pedagogical practices underpinned by experiential learning theory from a resource constrained context. The ethos of experiential learning is that *learning by doing* is the best way to learn (Kolb 1984; Kolb, Boyatzis, and Mainemelis 2001; Dewey and Small 1897). Scholars have emphasized that learning should be active, practical as well as theoretical not just passive (Gielnik et al. 2015; Rauch and Hulsink 2015; Neck, Greene, and Brush 2014; Neck and Greene 2011; Rasmussen and Sørheim 2006). Based on experiential learning theory, active and practical learning methods such as startup and other out-of-class experiences provide opportunities to transform experiences into knowledge. From Kolb (1984) standpoint, such learning occurs by applying theories (experimentation) and reflecting on the experiences from various perspectives (reflection). In this way, Arranz et al. (2017) suggest that experiential pedagogy may promote innovative outcomes; and inspire students' aspirations to innovate (Mayhew et al. 2012). In line with Arranz et al. (2017) and Mayhew et al. (2012), our study confirms that experiential pedagogical methods promote higher learning outcomes related to innovation.

Furthermore, in line with Souitaris, Zerbinati, and Al-Laham (2007) the results of this study confirm that using practitioners as educators is useful because it inspires students to change their attitude and confidence for entrepreneurship. This study echoes the remarks of Arranz et al. (2017) that entrepreneurship educators should be, to some extent, entrepreneurs. Such educators draw from real-life experiences when

teaching. Students perceive this teaching method highly inspiring because it breaks down the boundaries between the university and the outside world.

A point can be made about the importance of synergy between curriculum and teaching practices to achieve experiential pedagogy given the evidence of the central role of practitioners and business startup activities. Curriculum, for example, should make provision for the use of practitioners in class, student startup exercises, and collaborative learning practices.

To some extent, this study progresses an understanding of how context affects organizational behavior. Johns (2006) argues that management researchers should highlight the effects of context in their studies. Accordingly, we report that rather than dampening, the challenging business environment of Nigeria created in part by institutional and infrastructural voids strengthens innovative aspirations. One reason for this, from Lui's (2011) standpoint, is that institutional voids can offer opportunities to create innovative business models (Liu 2011). In this way our finding somewhat undermines the notion that institutional frameworks are critical for shaping innovative capacity. This finding is important as it shows that entrepreneurship education is not acontextual. Rather, the potential is maximized when the curriculum and pedagogy are contextualized.

Moreover, the evidence in this study may be encouraging for policymakers in Nigeria and other developing countries who advocate for entrepreneurship courses as part of a broader strategy to meet economic challenges such as unemployment and sustain economic growth. For example, in Nigeria, 49.5% of youths are either unemployed or underemployed (NBS 2016). Since innovative aspirations (which are the most appropriate antecedent of innovative entrepreneurship) can be nurtured, more investment should be made in experiential

pedagogy. Innovative entrepreneurs *create* new things (or bring new things to the market). In its extreme form, innovative entrepreneurs commercialize inventions (Baumol, Schilling, and Wolff 2009). Innovative entrepreneurship is the disruptive force that sustains economic growth.

For educators, this study confirms that pedagogical practices consistent with the philosophy of experiential learning theory (for example, startups and the use of practitioners) can support innovation capabilities. In this sense, Decramer et al. (2012) point out that activities for developing real business ideas are key ingredients for nurturing innovative aspirations.

To sum up, as Arranz et al. (2017) note, curriculum and pedagogy need to incorporate teamwork to improve critical- thinking, workshops delivered by practicing entrepreneurs to inspire positive attitude and confidence, and business start activities to allow students to maximize the development of innovative ideas. In particular, use of practicing entrepreneurs and business startups in entrepreneurship education can certainly contribute to the development of innovative entrepreneurs.

4.6 LIMITATIONS AND RECOMMENDATIONS

There are three main limitations to this study that should be considered when interpreting our results. First, the background of students in private and public universities may vary significantly, and therefore the outcomes of entrepreneurship education may vary across both university-types. PAU is a private university that attracts students from upper-middle class and upper class. The experiences of students from middle and upper-class family may be different than those from lower-class family who are more likely to be in public universities. For instance, it is possible that because of their background, some private university students have been exposed to technologies and innovation

that enables them to connect the dots (Shane and Venkataraman 2000) and develop innovative intentions.

Second, relates to the issues of class size. The class size of PAU (80) is significantly small compared to that of a public university in Nigeria with average class sizes of 500 students. This difference in the class size reasonably amplifies the challenges of embedding experiential pedagogy in large lectures. Investigating how experiential pedagogy manifests in larger class sizes might unpick more nuances in embedding experiential pedagogy in large lectures (Dean and Wright 2016).

The third limitation relates to replicability of PAU's pedagogy. PAU was selected for this study in part because they are the only university known at the time of this writing, that provides seed capital of $250 for student startup activity as part of the entrepreneurship course. Owing to financial constraints, the replicability of their pedagogy across public universities is open to debate.

Based on these three issues, therefore, care should be taken when interpreting the results of this study. To improve generalizability, future studies should adopt quantitative research approach to investigate a) how experiential pedagogy manifests in public universities; b) whether experiential pedagogy proposed in the conceptual framework elicit the same results in students across public and private university; c) whether the compulsory element of the entrepreneurship courses affect students across public and private university differently.

APPENDIX

Interview Protocol for Focus Groups Interview

Background

Any business owner in your family?
What are your future plans? Any ideas in mind?
What influences your future plans?

Course Details - Curriculum and Pedagogy

How do you feel about about the entrepreneurship course?
What have you learnt?
What topics did you find most interesting?
Which activities had the most impact on your experience in the course?
Best and worst aspects of your experience?

Supporting Conditions

How does the economic climate of the country affect your plans?
What are the challenges of innovative businesses in Nigeria?

Outcome -Aspirations

How would you say this course influenced your career plans?
What do you think about entrepreneurship as a career?
What is innovation?
How would you describe an innovative business?
How has this course changed your understanding of innovation?
Examples of innovative businesses in Nigeria?

INTERVIEW PROTOCOLS FOR PROGRAM DIRECTORS

What are the main objectives of the entrepreneurship course?
How did you come up with the curriculum for this entrepreneurship course?
What teaching practices do you use and why?
What external factors did you consider in designing the course?

5

PUTTING PEDAGOGY WHERE INTENTION TO ACT LIES: EVALUATING COMPULSORY ENTREPRENEURSHIP EDUCATION

Based on the propositions in Article 1 and drawing on the theory of planned behavior, we examine the links between experiential pedagogy and students' intention to innovate and entrepreneurial intent. Nigerian higher education includes compulsory courses in entrepreneurship across all public and private universities. Using structural equation modeling on a survey of 361 students, we find that: (a) regardless university type, out-of-class experiences and engaged faculty generate positive behavioral control and attitude towards entrepreneurship; (b) out-of-class experiences significantly increases intentions to innovate; (c) behavioral control mediates the relationship between out-of-class experiences and changes in intention to innovate; (d) university type – public or private – has no direct significant effect on the students intention to innovate. The results contribute to entrepreneurship education theory.

5.1 INTRODUCTION

Entrepreneurship is an important generator of jobs and economic growth (Van Praag and Versloot 2007; Birch 1979). For this reason, most emerging economies across Africa with high levels of youth unemployment, have turned to policies on entrepreneurship education and training in Higher Education Institutions (HEI) to stimulate entrepreneurial activities. In Nigeria, for instance, the government introduced the policy of compulsory courses in entrepreneurship edu-

cation across all public and private universities (Dakung et al. 2017; Sanusi, Olaleye, and Atjonen 2017). The objective of this policy is to make graduates self-employed, create job opportunities for others and generate wealth (Thaddeus 2012). The logic behind policies on entrepreneurship education is that entrepreneurial intention that is stimulated through entrepreneurship education will enhance proactive behaviors towards opportunities. Such behaviors potentially lead to the creation of new ventures, job creation (Greene, Katz, and Johannisson 2004) ultimately contributing to economic growth (Bosma et al. 2008; Van Praag and Versloot 2007; Acs 2006).

However, evidence from empirical studies and reviews of the impact of entrepreneurship education on entrepreneurship does not fully support this logic. For instance, the impact of entrepreneurship education on entrepreneurial intention is equivocal because while Article 1 of this thesis (see the propositions) and some studies (Nabi et al. 2018; Rauch and Hulsink 2015; Bae et al. 2014; Martinez et al. 2010; Souitaris, Zerbinati, and Al-Laham 2007; Lüthje and Franke 2003; Lee, Chang, and Lim 2005; Krueger and Carsrud 1993) report positive impact of entrepreneurship education, some others report negative effects (for example Graevenitz, Harhoff, and Weber 2010; Oosterbeek, Praag, and Ijsselstein 2010; Mentoor and Friedrich 2007). In addition, the link between entrepreneurship education and entrepreneurial activity is not well established in the literature (Baumol 2004), nor is it commonly agreed that all forms of entrepreneurship lead to higher employment rate and economic growth (Acs and Szerb 2007; Acs 2006).

Synthesizing this burgeoning body of empirical research and reviews on the impact of entrepreneurship education suggests three main research gaps. First, contextual reasons for contradictory reports of the impact of EE have not been fully explored (Arranz et al. 2017; Nabi et al. 2017; Nowiński et al. 2017). Examples of contextual factors

include type of university - public versus private (Canever, Barral, and Ribeiro 2017; Pihie, Bagheri, and Sani 2013; Zhang, Duysters, and Cloodt 2014; Perim 2015; Wang and Wong 2004) and type of course; elective versus compulsory. Most studies that assessed elective courses in entrepreneurship education reported positive impact (for example Gielnik et al. 2015; Rauch and Hulsink 2015; Souitaris, Zerbinati, and Al-Laham 2007) while most studies that assess compulsory courses in entrepreneurship education reported negative impacts (for example, Graevenitz, Harhoff, and Weber 2010; Mentoor and Friedrich 2007; Hytti et al. 2010). It is not clear whether there are elements of entrepreneurship education whose effects transcend context. Therefore it is important to explore these contextual factors in a single study to unpick these issues.

Second, the role of experiential pedagogy -teaching practices which are consistent with Kolb's (1984) Experiential Learning Theory, in training innovative entrepreneurs is not fully established in the literature (Nabi et al. 2017; Dakung et al. 2017; Pittaway and Cope 2007). Scholars suggest that experiential pedagogy can be linked to innovative outcomes (Neck and Greene 2011; Neck, Greene, and Brush 2014; Mayhew et al. 2012; Pittaway and Cope 2007; Baumol, Schilling, and Wolff 2009; McMullan and Boberg 1991; McMullan and Long 1987). It is important, therefore, to investigate this link in order to further understand how innovative entrepreneurs — people who engage in creative processes that lead to new product, process or service —can be trained regardless of the context. Third, to extend the fast-growing conversation on innovative entrepreneurship on to new frontiers, research needs to focus on novel impact indicators. We argue that one of such novel impact indicators is *intention to innovate* - the motivation to exploit new and innovative entrepreneurial opportunities (Mayhew et al. 2012).

These three distinct yet related research gaps form the rationale for this study. The objective is to examine the effects of compulsory courses in entrepreneurship (required courses that a student has to take to complete the requirements for a particular university program) across public and private universities and unpick the link of experiential pedagogy to intent to innovate. Thus, the following research questions are raised; 1) Does a compulsory course in entrepreneurship education affect students' intention to innovate? 2) Can experiential pedagogy influence intent to innovate? 3) Does the impact of compulsory courses in entrepreneurship education vary across public and private universities?

To address these questions, we adopt a quantitative research approach. With this approach, hypotheses are developed by analysis of extant literature; then data is collected and statistically analyzed to explore the relationship between variables that are measured. The study draws on the theory of planned behavior and focusses on Nigeria following the introduction of compulsory courses in entrepreneurship across all public and private universities. A considerable number of research articles on EE emanating from Nigeria are speculative in their claims about the effects of compulsory entrepreneurship course Arogundade (2011), Maina (2014), Ekpoh and Edet (2011), and Izedonmi and Okafor (2010). Moreover, only a few report the teaching techniques used in the Universities they investigated Ojeifo (2013), Akudolu (2010), and Achor and Wilfred-Bonse (2013). At present writing, no study in Nigeria has investigated experiential pedagogy and innovative entrepreneurship. Based on the natural experiment by policy and looking across a sample of 361 students, the study evaluated the impact of a compulsory course in entrepreneurship over a period of 5 months across public and private universities.

The main strength of this study is the adoption of an integrated theoretical framework (see figure 5.2) that covers contextual factors, experiential pedagogy and mediators that explain changes in intent to innovate. These mediators are particularly useful because they elucidate the mechanisms that affect innovative entrepreneurship (Davidsson 2007; Gielnik et al. 2015). By addressing these gaps in a single study, this study provides a more comprehensive explanation for the contradictory findings, contributes to the entrepreneurship education theory, and equips educators as well as policymakers with information to cultivate innovative entrepreneurs.

The next section presents a detailed review of the literature on impact studies and unpicks the reasons for findings that are contradictory. Following this, we postulate the manner in which attitude and behavioral control mediate the effect of pedagogy and university type (public versus private) on intent to innovate. Later, we test out hypotheses on data from 361 students from two private universities and one public university. The later sections of the article discuss the empirical findings, the theoretical and practical implications, and the limitations of the study.

5.2 REVIEW OF IMPACT STUDIES & IMPACT INDICATORS

The history of entrepreneurship education, EE dates back to February 1947 when Myles Mace taught the first entrepreneurship course at Harvard Business School; 188 MBA students were enrolled. By 1994, approximately 50 years later, more than 120,000 American students were taking entrepreneurship or small business courses (Katz 2003). Since then, EE in higher education has grown exponentially across the world including Asia and Africa (Jeon and Lee 2013; Nelson and Johnson 1997; Neck, Greene, and Brush 2014; George 2015).

This growth reflects the increasing belief that EE supports a range of entrepreneurial outcomes. Researchers assess these entrepreneurial outcomes through the prism of Henry, Hill, and Leitch's (2003) classification system for impact measures (Nabi et al. 2017). Level 1 and 2 are short-term/ subjective indicator such as skills, knowledge such as problem solving, opportunity identification (DeTienne and Chandler 2004); attitude and behavioral control (Greene and Saridakis 2008); and entrepreneurial intention (Rauch and Hulsink 2015; Souitaris, Zerbinati, and Al-Laham 2007; Nabi et al. 2018). Level 3 and 4 are typically longer-term/objective indicators such as start-ups, job creation and venture performance within 10 years of completing EE (Greene, Katz, and Johannisson 2004; Rideout and Gray 2013). While Level 5 relates to contributions of ventures after 10years of completing EE such as economic growth and development (Bosma et al. 2008; Acs 2006; Acs and Szerb 2007) (see Figure 5.1 for details).

However, the increasing belief in the efficacy of EE is not well supported in the literature. Systematic reviews of impact studies suggest that the effect of EE on attitudes and behavior is equivocal (Nabi et al. 2017). This is because although the majority of studies report a positive impact on a range of outcomes such as entrepreneurial intention and attitudes, a significant number of them also report negative and non-significant impacts too (Nabi et al. 2017; Mwasalwiba 2010; Pittaway and Cope 2007). For example "most of the reviewed articles (61 articles out of 81, 75%) report a positive link between EE and participants' start-up intentions. Nonetheless, several studies report mixed, negative, or nonsignificant/ambiguous results for the link with entrepreneurial intentions (18 articles or 22% [...])" (Nabi et al. 2017, p 281).

With this initial observation in mind, the next sections explore the reasons for the mixed results in EE impact studies and identify the research gaps identified in the current strand of literature.

5.2.1 *Potential reasons for differing results*

Synthesizing the budding empirical studies and review of EE outcomes suggest four categories of reasons for the mixed results. First, contextual factors that affect teaching and learning; Second, the methods that were utilized to measure the impact of entrepreneurship education; and third, the pedagogy for the entrepreneurship course.

5.2.1.1 *Contextual Factors*

Context matters when assessing the impact of entrepreneurship education (Arranz et al. 2017; Nabi et al. 2017; Nowiński et al. 2017). Some of the contextual factors that affect the impact of EE include characteristics of entrepreneurship course, type of university, socio-economic backgrounds of students, national conditions and cultural values.

TYPE OF COURSE When reviewing impact studies, the characteristics of the specific program being examined may help to explain the contradictory results. Graevenitz, Harhoff, and Weber (2010) examines an entrepreneurship course of the Munich School of Management at Ludwig Maximilian University in Munich, Germany and reports a negative relationship between EE and entrepreneurial intention. Olomi and Sinyamule (2009) examine a training program that is offered in Vocational Training Centers in a remote region in Tanzania and reports mixed results EE-entrepreneurial intention relationship. Mentoor and Friedrich (2007) investigate students taking a business management

course at the Faculty of Economic and Management Sciences at the University of the Western Cape, South Africa and finds a negative EE-entrepreneurial relationship. It is difficult to compare these results.

For one thing, without an in-depth explanation of the programs investigated, it is arguable whether the curricula content of an entrepreneurship course in Germany, the vocational training course in Tanzania and the business management course in South Africa are similar enough for the results of these studies to be comparable. For another, while two of the studies (Olomi and Sinyamule 2009; Mentoor and Friedrich 2007) assessed elective entrepreneurship programs, one of them (Graevenitz, Harhoff, and Weber 2010) investigates a compulsory entrepreneurship course. It is noteworthy that whereas elective programs tend to attract those students who have an interest in entrepreneurship education (Lorz 2011) compulsory course, by nature, may comprise a mix of entrepreneurial-minded students and non-entrepreneurial-minded students (as the case is in Nigeria see Dakung et al. 2017).

In general, most studies that assess the impact of elective courses in EE on entrepreneurial intention report positive impact (for example Gielnik et al. 2015; Rauch and Hulsink 2015; Souitaris, Zerbinati, and Al-Laham 2007). A notable exception to this is Mentoor and Friedrich (2007) that investigated EE in South Africa. On the other hand, most studies that assess compulsory courses in entrepreneurship education reported negative impacts (for example, Graevenitz, Harhoff, and Weber 2010; Hytti et al. 2010; Oosterbeek, Praag, and Ijsselstein 2010); Oosterbeek, Praag, and Ijsselstein (2010) surveyed college students in a Dutch state. Graevenitz, Harhoff, and Weber (2010) surveyed undergraduate students at a German University. Hytti et al. (2010) analyze the motivations of students taking a compulsory entrepreneurship program. They find that students with intrinsic motivation report a

lesser degree of satisfaction with the course than they expected while those taking the program with extrinsic motivation express a greater degree of satisfaction.

However, a notable exception to studies on compulsory EE programs is a study by Global Entrepreneurship Monitor Martinez et al. (2010). In that study, students enrolled in elective entrepreneurship program were separated from those who enrolled in compulsory entrepreneurship program. They found a significant gain from the program in the compulsory entrepreneurship program group (Martinez et al. 2010). Among other factors, a plausible explanation of their result may be due to methodological rigor (this point is discussed in section 5.2.1.2 below). They utilized a longitudinal research design with a comparison group.

In addition to the nature of the EE program, the type of academic discipline of students may influence the impact of the EE also. For example, a recent study by Arranz et al. (2017) finds that students of technological and design degrees are more likely to engage in start-up enterprises than students of business and marketing.

In explaining the decline in entrepreneurial intention after undertaking an entrepreneurship program, Graevenitz, Harhoff, and Weber (2010) asserts EE is foremost a way for students to test their aptitude for an entrepreneurial career choice; through the program, students may discover that they have no aptitude for an entrepreneurial career. As Nabi et al. (2017) put it, the initial positive attitudes toward entrepreneurship, which are not fully formed, change once confronted with the realities of a business start-up during EE. To this extent, the decline in entrepreneurial intention is potentially a socially desirable effect.

STUDENT BACKGROUND Student background also defines the impact of EE (Nabi et al. 2017). The effect of EE tends to be positive for those with little or no prior exposure to entrepreneurship because they usually increase their entrepreneurial intention, attitudes, and self-efficacy by participating in the programs (e.g., Fayolle and Gailly 2015; Fayolle, Gailly, and Lassas-Clerc 2006b). In contrast, for those students with previous entrepreneurial experience, family background, or high previous entrepreneurial intention, the effects are generally weaker and may even be negative (e.g., Graevenitz, Harhoff, and Weber 2010; Fayolle, Gailly, and Lassas-Clerc 2006a). Bae et al. (2014) found that after controlling for pre-educational entrepreneurial intentions, the impact of EE on entrepreneurial intentions is not significant. Souitaris, Zerbinati, and Al-Laham (2007) investigated two entrepreneurship education programs and found, in contrast with Peterman and Kennedy (2003), that EE did not have an impact on perceived behavioral control of students. According to the authors, the insignificant impact was intuitively difficult to explain; however, they speculate that the students already had high perceived behavioral control and therefore there was less scope for a change attributed to EE. Oosterbeek, Praag, and Ijsselstein (2010) argue that the reason for their negative result may have been that participants had lost their over-optimism about entrepreneurship and rejected the idea of becoming an entrepreneur after the program had finished. A similar explanation was provided by Olomi and Sinyamule (2009), who suggest that participants may have gained a more realistic overview of entrepreneurship and therefore did not want to become entrepreneurs after the end of the program.

GENDER Gender is also an important source of contradictory findings. Studies that focus on the differential impact of EE for male and female students/graduates identify gender-specific effects. For exam-

ple, Wilson, Kickul, and Marlino (2007) find that EE has a stronger impact on self-efficacy among females than males. Gender-specific effects also vary across countries. Joensuu et al. (2013) find that EE reduces entrepreneurial intention for female Finish students while Packham et al. (2010) report that EE reduces entrepreneurial intention for male German students.

In contrast to Joensuu et al. (2013) and Packham et al. (2010), Bae et al. (2014) find that gender does not significantly moderate the relationship between EE and entrepreneurial intention. However, Bae et al. (2014) did not specifically examine studies of EE in higher education, but rather looked at averages from a meta-analysis across educational levels. Overall, studies that examine the effects of gender are too few to conclude if EE favors males or females.

TYPE OF UNIVERSITY Similar to student background and the type of EE, university type may shape the impact of EE. Scholars report conflicting results of impact studies across private and public universities (Canever, Barral, and Ribeiro 2017; Pihie, Bagheri, and Sani 2013; Zhang, Duysters, and Cloodt 2014; Perim 2015; Wang and Wong 2004). In their cross-sectional study, Pihie, Bagheri, and Sani (2013) find that entrepreneurial intentions of students from private universities are higher than their counterparts from public universities. In contrast, Canever, Barral, and Ribeiro (2017) find that university environments (public and private) in Brazil do not present significant differences in the way they influence the EE-entrepreneurial intention relationship. Petridou and Sarri (2011) report that entrepreneurial intentions are raised in generalist university, but lowered in technology university. Similarly, Zhang, Duysters, and Cloodt (2014) report that EE has a greater effect on the entrepreneurial intention for students from technological universities than from other universities. This difference can

be attributed to the social-economic background of students, university environment or a realization of the complexities with starting a technology venture (Nabi et al. 2017).

NATIONAL CONDITIONS AND CULTURE Although studies rarely test the direct impact of culture across countries, national cultures may also explain the contradictory evidence of the impact of EE. For instance, by using a meta-analysis of 73 studies, Bae et al. (2014) find a significant but a small positive relationship between EE and entrepreneurial intentions, but also found that cultural dimensions like uncertainty avoidance (level of comfortableness with uncertainty and ambiguity Hofstede 2001) moderate the relationship. They report that the effects of EE on entrepreneurial intentions are reinforced in (1) high in-group collectivistic countries, (2) low gender egalitarianism countries, and (3) low uncertainty avoidance countries. Moreover, culture is also likely to exhibit interaction effects with other impact factors like gender. This may explain, in part, why Joensuu et al. (2013) and Packham et al. (2010) report contradictory results of the EE-entrepreneurial intention relationship for male and female students across Finland and Germany respectively.

To emphasize the role of culture and national conditions, Nowiński et al. (2017) investigate the impact of EE on entrepreneurial intention across four countries - Czech Republic, Hungary, Poland and Slovakia. They find that the impact of EE on entrepreneurial intention was positive in Poland alone. Similarly, Lee et al. (2006) report that there is a strong cultural bias on the impact of EE between the US, Korea, China and Fiji. Olomi and Sinyamule (2009) studied vocational training programs in remote areas in Tanzania which can scarcely be compared with the programs designed for privileged students of Western European universities. Their results suggest that

policymakers should be careful in promoting entrepreneurship as an alternative career for the unemployed. The Global Entrepreneurship Monitor examines entrepreneurial aspirations, attitudes, and activities globally and reports differences between economies in three levels of development; factor-driven, efficiency-driven, and innovation-driven countries (Donna J. Kelley 2010)). Tanzania, although not included in the 2010 sample, can be categorized as a factor-driven economy, while the Western countries in this sample belong to the category of innovation-driven. Given the effect of national conditions and culture, researchers ought to choose culturally similar countries or control for culture and national conditions before conducting any reasonable comparison.

5.2.1.2 *Method*

Three major methodological variations of previous studies may also help to explain the conflicting results: First, cross-sectional survey methodology, the lack of control groups and use of small sample sizes (Rideout and Gray 2013; Bae et al. 2014; Martin, McNally, and Kay 2013; Lorz 2011). Nabi et al. (2017) report that 68% of the articles in their review use cross-sectional survey methodology. Cross-sectional survey collects data to make inferences about a population at one point in time. In other words, they are "snapshots of the populations about which they gather data" (Hall and Lavrakas 2008). Impact studies that use cross-section survey collect data only after the education has taken place (e.g., Kolvereid and Moen 1997; Noel 2002). Kolvereid and Moen (1997) and Noel (2002) find that entrepreneurship majors have a higher likelihood of becoming entrepreneurs after graduation. Although ex-post data may indicate that EE, in general, had a positive impact on entrepreneurial intention, it is important to note the predictive limitations of cross-sectional studies. The primary limitation of such design

is that because the exposure to EE and entrepreneurial outcomes are simultaneously assessed, there is generally no evidence of a temporal relationship between EE and entrepreneurial outcomes (Carlson and Morrison 2009). For example, consider a study that examines two groups of graduates, one of them comprising entrepreneurship majors, and the other comprising non-entrepreneurship majors. If such a study reports that entrepreneurship major graduates have a higher entrepreneurial intention, one may ask what the impact of EE was. Did it strengthen the intentions of students who were already interested in pursuing an entrepreneurial career - since it is plausible that entrepreneurship majors might have interests in entrepreneurship before choosing the program? Or did it highlight the challenging realities of a career in entrepreneurship for skeptical students? It is difficult to draw predictive conclusions regarding the impact of EE on intentions from such a study because EE may be a result of entrepreneurial intention and not a cause. The weakness of the predictive conclusion of a cross-sectional study is worsened by the absence of a control group (e.g., Fayolle, Gailly, and Lassas-Clerc 2006a). In light of the methodological weaknesses inherent in some impact studies of EE, some authors concluded that there is little evidence as to its effectiveness (Rauch and Hulsink 2015). Without longitudinal data, it is not possible to establish a true cause and effect relationship (Solem 2015).

In contrast to cross-sectional design, longitudinal research design utilize quasi-experimental pre-post test measurements. With this design, a "researcher can identify and quantify the direct impact of the education program on the participant regardless of selection bias and previous background" (Lorz 2011, p. 15). The predictive power of longitudinal studies is strengthened when there is a control or comparison group. This method allows a researcher to examine the effect

of EE as well as to determine whether there are differences in the pre- and posttest in the absence of a training intervention (Rauch and Hulsink 2015). Studies with longitudinal design and control group generally demonstrate a pattern of positive EE-entrepreneurial intention relationship (e.g., Souitaris, Zerbinati, and Al-Laham 2007; Rauch and Hulsink 2015) Using this method to investigate compulsory EE, Martinez et al. (2010) find a gain from EE. However, even with the methodological rigor of longitudinal design with a control group, a few studies still report a lack of significant results for entrepreneurial self-efficacy (Souitaris, Zerbinati, and Al-Laham 2007) or significantly negative impact on entrepreneurial attitudes (Mentoor and Friedrich 2007).

To some extent, the effects of methodological variations can be illustrated by a juxtaposition of Fayolle, Gailly, and Lassas-Clerc (2006a) and Fayolle, Gailly, and Lassas-Clerc (2006a). On one hand, Fayolle, Gailly, and Lassas-Clerc (2006a) use cross-sectional design to examine only the experimental group of 20 participants after a one-day training and report that EE has "a strong measurable impact on the entrepreneurial intention of the students" Fayolle, Gailly, and Lassas-Clerc (2006a, p. 701). On the other hand, Fayolle, Gailly, and Lassas-Clerc (2006b) use longitudinal design to study a sample of 275 students before and after a 3-day entrepreneurship program and report that EE increases the entrepreneurial intention of students with initial perspectives on entrepreneurship and decreases the intention of students who have not been exposed to entrepreneurship. It is noteworthy that both studies did not use a control group and therefore conclusions must be drawn with caution.

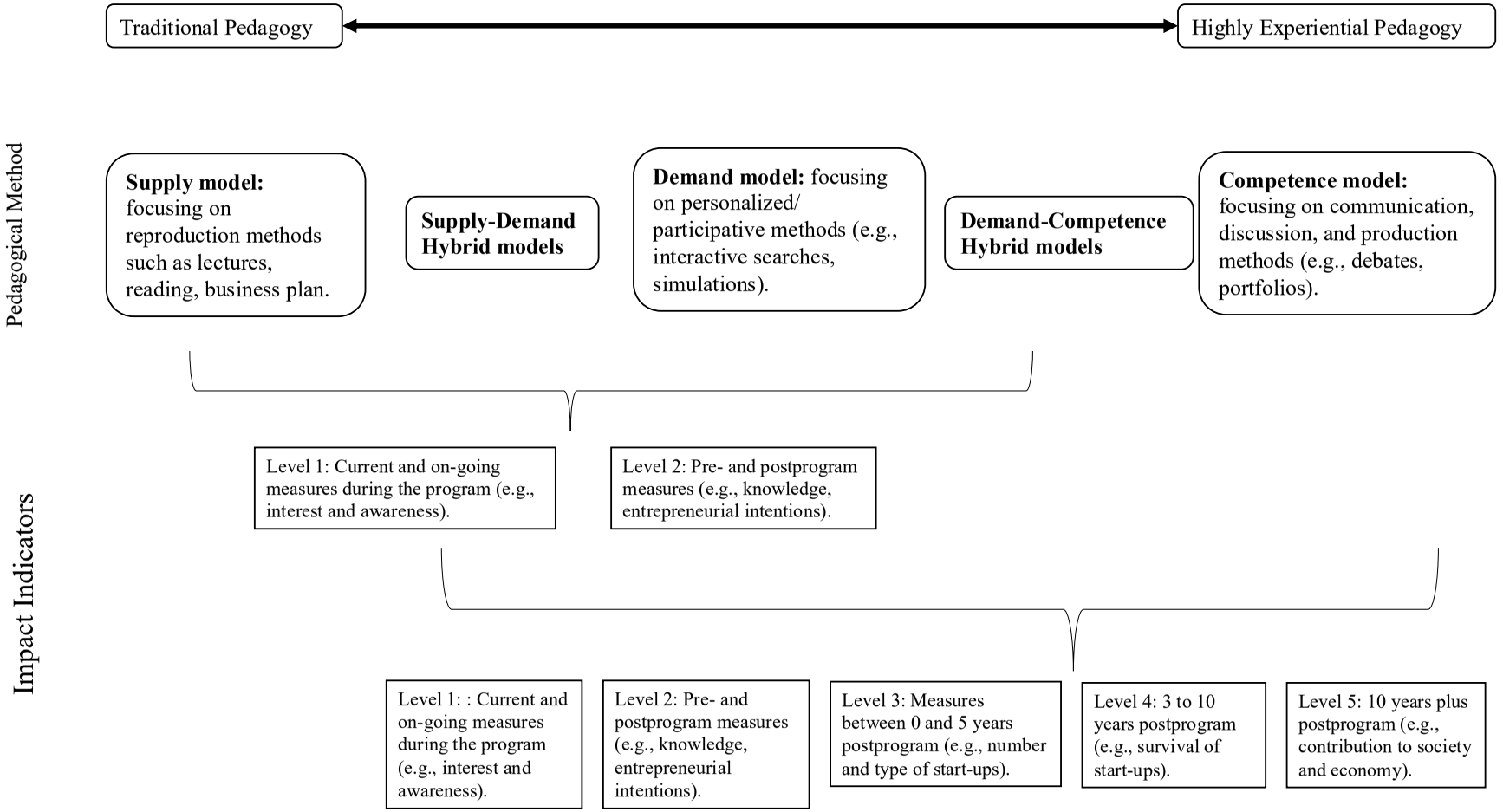
5.2.1.3 *Pedagogy*

According to Nabi et al. 2017, the confusion regarding the impact of EE may be due in part to the range of pedagogical methods employed in EE programs. The lack of a detailed description of pedagogical intervention makes it more difficult to compare the results of various studies (Martin, McNally, and Kay 2013).

According to Mwasalwiba (2010), lectures are still the most used method of teaching entrepreneurship because they can be easily accomplished, and also because they require less investment (Fiet 2001b; Fiet 2001a). Bennett (2006) argues that lectures are less effective in influencing entrepreneurial attributes. However, depending on how they are delivered, traditional lectures may be effective. For instance, despite focusing on transmitting knowledge to students so that they "know about entrepreneurship," Yar Hamidi, Wennberg, and Berglund (2008) find that EE is positively linked to entrepreneurial intention. Their result was due to creativity development exercises which are are consistent with experiential learning. Also, Sanchez (2011) reports a positive link between EE and self-efficacy from a program that focuses on transmitting knowledge about entrepreneurship to students. Figure 5.1 shows, diagrammatically, the pedagogical models and their corresponding impact indicators. As shown in the figure, entrepreneurial intention is a level 2 impact indicator.

Besides lecture, business planning - another example of supply teaching model, is so firmly entrenched in EE that it may persist in the face of any critical empirical data Honig (2004). The argument for it is that through the process of drafting a business plan, one gains the knowledge and skills to strengthen one's entrepreneurial intentions (Bae et al. 2014; Honig 2004; Fayolle, Gailly, and Lassas-Clerc 2006a; Graevenitz, Harhoff, and Weber 2010). However, the evidence of the

Figure 5.1: An Integrated Teaching Model Framework of EE Impact indicator and Underpinning Pedagogy (Adapted from Nabi et al. 2017)



effectiveness of business plan as pedagogy is mixed. Lange et al. (2014) find that while business plan raised intention and entrepreneurial behavior of students, it decreased the entrepreneurial behavior among alumni.

Moreover, demand and competency model pedagogy go beyond classroom teaching and include exercises that are consistent with the experiential learning theory. Examples of demand model pedagogy include student-led entrepreneurship clubs and network events and interaction with entrepreneurs (Souitaris, Zerbinati, and Al-Laham 2007); examples of competency model pedagogy is student start-up activities. Demand model pedagogy is positively linked to lower impact indicators like feasibility, knowledge (Jones and Jones 2011) and entrepreneurial intention (Souitaris, Zerbinati, and Al-Laham 2007; Fayolle, Gailly, and Lassas-Clerc 2006a; Fayolle, Gailly, and Lassas-Clerc 2006b) Mixed results have also been reported (Chang and Rieple 2013; Harris, Gibson, and Taylor 2007). Unlike supply and demand models, competency model pedagogy is linked to higher impact indicators such as actual business start-up and business growth (Nabi et al. 2017) in addition to lower impact indicators such as entrepreneurial intention (Olokundun et al. 2018).

A notable exception though is Bae et al.'s (2014) finding that venture creation pedagogy does not strengthen the relationship between EE and entrepreneurial intention. The limitation of Bae et al.'s meta-analytic review is that it used an inadequate number of samples in the subgroups for venture creation which reduces the power of the analysis.

As noted earlier, the difficulty in explaining the mixed results for demand models is complicated by insufficient details on the pedagogy researchers study. In their review of 159 articles, Nabi et al. (2017) find that only 45% provided sufficient pedagogical detail to determine the

pedagogical approach of the EE investigated. It is plausible that the conflicting studies may be due in part, to how pedagogy is delivered. For example, the weaknesses in most business planning education as Honig (2004) highlighted, is that the process encourages thinking "inside the box" rather than "outside the box." In response, Honig proposed two alternative models of business plan pedagogy: The experiential and the contingency models. The experiential learning theory underpins both models.

In general, Nabi et al. (2017) suggests that experientially based teaching methods might have stronger effect on entrepreneurial intention and behavior than non-experientially based. In the words of Nabi et al. (2017) "more experiential pedagogies seem to have the most potential to have an impact at higher levels because students focus on developing behavioral competence in solving problems in real-life entrepreneurial situations" (Nabi et al. 2017, p. 292). Highly experiential teaching methods are speculated as appropriate for training innovative entrepreneurs (Baumol, Schilling, and Wolff 2009; McMullan and Boberg 1991), and they have been linked to innovative outcomes (Mayhew et al. 2012; Neck and Greene 2011; Neck, Greene, and Brush 2014).

5.2.2 *The Issues in Literature*

Overall, the preceding literature review suggests that the reasons for conflicting results are integrated and complicated. However, it also indicates that gaps in literature and room for further exploration of the impact of entrepreneurship education. First, the review suggests that contextual factors alone cannot explain the contradictory results of impact studies. Moreover, there is no conclusive evidence that any set of contextual factors guarantees positive, mixed or negative results.

Rather, the review raises the question of whether there are elements of EE whose impact remains constant regardless of context. Therefore, it is important to explore some contextual factors in a single study to shed more light on the effects of context.

Second, scholars suggest that highly experiential teaching methods are likely more appropriate for training innovative entrepreneurs. It is important, therefore, to empirically investigate this link for potentially conclusive evidence. Third, to expound the fast-growing conversation on innovative entrepreneurship, research needs to focus on novel impact indicators that researcher can use in higher education research. One such novel impact indicator is *intention to innovate*. Finally, although the results from the overwhelming majority of studies indicate a positive impact of EE, most of the studies use weak methods and research design. For instance, over 80% of impact studies from Nigeria and Ghana (from the list of studies in Table 5.1), use cross-sectional survey design and do not describe the type of pedagogy used in the programs they investigate. Further, methodologically rigorous studies are required to validate the positive results and such studies should describe the pedagogy being investigated to allow future comparison of results.

In view of these four points, the next section discusses the theory that underpins this study and the hypotheses to investigate.

5.3 THEORY AND HYPOTHESES

The two evidentiary propositions in Article 1 form the basis of this study. Broadly, both propositions (Proposition 1: *Experiential pedagogy will raise the aspiration of students for entrepreneurship* and Proposition 2: *Experiential pedagogy raises innovative aspirations and increases the likelihood of innovative entrepreneurship*) suggest that entrepreneurship

Author	Journal	Contextual Factors	Pedagogy of Course	Design	Sample	Control group	Impact indicator	Results
Afriye and Nina (2014)	Athens Journal of Education	Ghana, Public University, Faculty of Education where EE is a core course	Not described	Cross-sectional Survey	203	No	Entrepreneurial Culture: measured using entrepreneurial mindset, business startup motives and entrepreneurial orientation	Significant relationship was observed between entrepreneurship education and entrepreneurial culture
Asamani and Mensah (2013)	European Journal of Business and Management	Ghana, Public University,	Not described	Cross-sectional Survey	520	No	Entrepreneurial Inclination	High level of entrepreneurial inclination
Babatunde and Durowaiye (2014)	Education+ Training	Nigeria, Private University, Compulsory EE	Not described	Cross-sectional Survey	120	No	Self-employment Intention	Positive impact
Dakung et. Al. (2017)	Journal of Small Business & Entrepreneurship	Nigeria, Public University, Compulsory EE	Partially through Survey	Cross-sectional Survey	286	No	Entrepreneurial Action	Pedagogy, course content and entrepreneurship education are significant predictors of EA
Ekpo and Edet (2011)	International Education Studies	Nigeria, Public University, Compulsory EE	Not described	Cross-sectional Survey	500	No	Entrepreneurial Intention	Positive impact
Idogho (2011)	International Journal of Business and Management	Nigeria, Public University, Compulsory EE	Not described	Cross-sectional Survey	300	No	Managerial Skills, Entrepreneurial intention	Positive impact
Izedonmi and Okafor (2010)	Global Journal of Management and Business Research	Nigeria, Compulsory EE	Not described	Cross-sectional Survey	237	no	Entrepreneurial Intention	Positive impact
Obisanya (2010)	IFE Psychologia: An International Journal	Nigeria, Public University, Compulsory EE	Not described	Longitudinal design and control group	600	Yes	Entrepreneurial attitude	Positive impact
Olokundun (2017)	Journal of Entrepreneurship Education	Nigeria, Compulsory EE	Not described	Cross-sectional Survey	600	No	Opportunity Identification	Positive impact
Olokundun et. Al. (2018)	Data in Brief	Nigeria, Public University, Compulsory EE	Not described	Cross-sectional Survey	600	No	Entrepreneurial Intention	Positive impact
Owusu-Ansah and Poku (2012)	International Journal of Humanities and Social Science	Ghana, Public university	Not described	Longitudinal design	310	No	Attitudes and Entrepreneurial Intention and aspirations	EE influence attitudes, entrepreneurial intention and aspirations
Sofoluwe et. Al., 2013	Journal of Business Administration and Education	Nigeria, Public University, Compulsory EE	Not described	Cross-sectional Survey	111	No	Human Capital development	Positive

Table 5.1: Impact Studies from Nigeria and Ghana

education can elicit changes in entrepreneurial intention (*aspiration of students for entrepreneurship)* and intention to innovate (*innovative aspirations*). Specifically, the propositions suggest that experiential pedagogy may be key to explaining the changes in entrepreneurial intention and intention to innovate. Accordingly, the three sets of hypotheses set forth in the sections below are developed to prove these propositions. The findings of testing the hypothesis can enhance the generalizability of the propositions.

5.3.1 *Entrepreneurial Intention and the Case for Intent to Innovate*

This study makes a distinction between general intention to pursue an entrepreneurial career - entrepreneurial intention, and a more specific intention to exploit new entrepreneurial opportunities -*intention to innovate* (Shane and Venkataraman 2000). Entrepreneurial intention is the conviction by a person to set up a new business venture and consciously plan to do so at some point in the future (Thompson 2009). Based on Lumpkin and Dess (1996) definition of innovativeness, intention to innovate is defined *as a conscious plan to engage in and support new ideas, novelty, experimentation, and creative process that may result in new product(s), service(s) or process(es).* To the extent that innovation may vary in its degree of "radicalness," intent to innovate may also vary along a continuum from low to high. Low intent to innovate refers to plan(s) to only improve existing goods and services by other entrepreneurs and appropriating some of their entrepreneurial profits. High intent to innovate, refers to plan(s) to discover and exploit new entrepreneurial opportunities and create new goods and services within a domain or a context. Regardless of the degree, intent to innovate represents an individual's plan to deviate from the existing state of the art and venture into new ones.

As Krueger eloquently remarks, "intentions are the single best predictor of any planned behavior" (Krueger, Reilly, and Carsrud 2000, p. 412). Innovative entrepreneurship, like any planned behavior, is hard to observe and involves "unpredictable time lags" (Souitaris, Zerbinati, and Al-Laham 2007, p. 568). Moreover, from a research standpoint, it is not always practicable to wait some years to examine how many students eventually start a business and what type of businesses they start. Since intention is the best predictor of behavior, assessing intention as an outcome of entrepreneurship education is a pragmatic way to predict the likelihood of entrepreneurial action. Therefore, intention to innovate is arguably sufficient and appropriate to help predict innovative entrepreneurship.

It is argued that both types of intentions share the same antecedents and remain predictors of behaviors. In line with this, the next section discusses Ajzen's widely used Theory of Planned Behaviour (TPB) (Ajzen 1985) that will be used to assess both intentions.

5.3.2 *Theory of Planned Behavior and Intent to Innovate*

This study adopts the TPB for three reasons. First, it has been subjected to testing and the results offer strong statistical support of the model (Krueger, Reilly, and Carsrud 2000). TPB is arguably the most statistically robust and theoretically sound model for explaining how a person becomes an entrepreneur (Davidsson 1995; Krueger and Carsrud 1993; Lüthje and Franke 2003; Fayolle, Gailly, and Lassas-Clerc 2006a; Souitaris, Zerbinati, and Al-Laham 2007; Mayhew et al. 2012). The other widely used model for intention is the entrepreneurial event model by Shapero and Sokol (1982). This model is focused "on the issue of new business creation and not on the evolution towards the adoption of entrepreneurial behavior in general" (Fayolle, Gailly,

and Lassas-Clerc 2006a, p. 707). As a result, the entrepreneurial event model is not suitable as a theoretical framework for the research questions. Second, it gives the opportunity to measure the development of intentions through entrepreneurship education. Third, it has been applied in other similar empirical studies (Mayhew et al. 2012).

The underlining assumption of the TPB is that individuals have volitional control over their behavior; that intent predicts action: those with intention are more likely to perform the behavior than those without intention (Mayhew et al. 2012). Accordingly, this theory posits behavior as a function of intention and intention as a function of three elements: attitude towards entrepreneurship, subjective norms and perceived behavioral control (Ajzen 1985). Attitude towards entrepreneurship refers to the degree of desirability of a certain behavior based on the expectations and beliefs about the personal impact of outcomes resulting from such behavior (Krueger, Reilly, and Carsrud 2000). Subjective Norms refer to social and cultural pressure to become an entrepreneur (Krueger, Reilly, and Carsrud 2000). Perceived Behavioral Control as Rauch and Hulsink (2015) state "reflects perceptions regarding behavior as personally controllable as well as notions relating to the ease or difficulty of initiating a behavior. Perceived behavioral control reflects past experiences as well as the presence or absence of resources and opportunities, which means that this dimension recognizes that many behaviors are not completely under volitional control" (p. 190). In other words, Perceived Behavioral Control overlaps with the concept of self-efficacy (Bandura 1986); a measure of an individual's perceived ease or difficulty of becoming an entrepreneur (Krueger, Reilly, and Carsrud 2000). Attitude, Subjective Norms, and behavioral control can be summarized respectively with these three questions: How desirable is it to perform this behavior? How desirable do people close to the individual in question think

it is to perform this behavior? Do I believe in my ability to perform this behavior? (Lorz 2011). However, as seen in figure 5.2, the model does not include subjective norms, in part due to its traditionally insignificant role in TPB (see Peterman and Kennedy 2003; Autio et al. 2001; Krueger, Reilly, and Carsrud 2000) and because the beliefs of friends and family cannot be influenced directly by entrepreneurship education (Rauch and Hulsink 2015).

5.3.3 *Compulsory Education, Intention to Innovate and its antecedents*

Human capital theory predicts that individuals who possess greater levels of knowledge, skills, and other competencies will achieve greater entrepreneurial outcomes than those who possess lower levels (Martin, McNally, and Kay 2013). A compulsory course in entrepreneurship raises awareness, knowledge and skills regarding entrepreneurship (Dakung et al. 2017; Martinez et al. 2010). Therefore, from the perspective of human capital theory (Ratzinger et al. 2018; Mosey and Wright 2007; Martin, McNally, and Kay 2013; Marvel and Lumpkin 2007), compulsory entrepreneurship education elicits changes in entrepreneurial intentions. Although some studies of compulsory courses in entrepreneurship education report negative impact on intention (Oosterbeek, Praag, and Ijsselstein 2010; Graevenitz, Harhoff, and Weber 2010), overall, those studies are more than offset by the numerous studies that show positive impacts of entrepreneurship education (Arranz et al. 2017; Nabi et al. 2018; Martinez et al. 2010; Rauch and Hulsink 2015; Fayolle and Gailly 2015; Fayolle, Gailly, and Lassas-Clerc 2006a; Mayhew et al. 2012; Krueger, Reilly, and Carsrud 2000; Lüthje and Franke 2003; Souitaris, Zerbinati, and Al-Laham 2007; Kolvereid 1996b). Moreover, some studies of compulsory entrepreneurship programs report positive impact. For example, the findings of a recent study by Global Entrepreneurship Monitor in which students

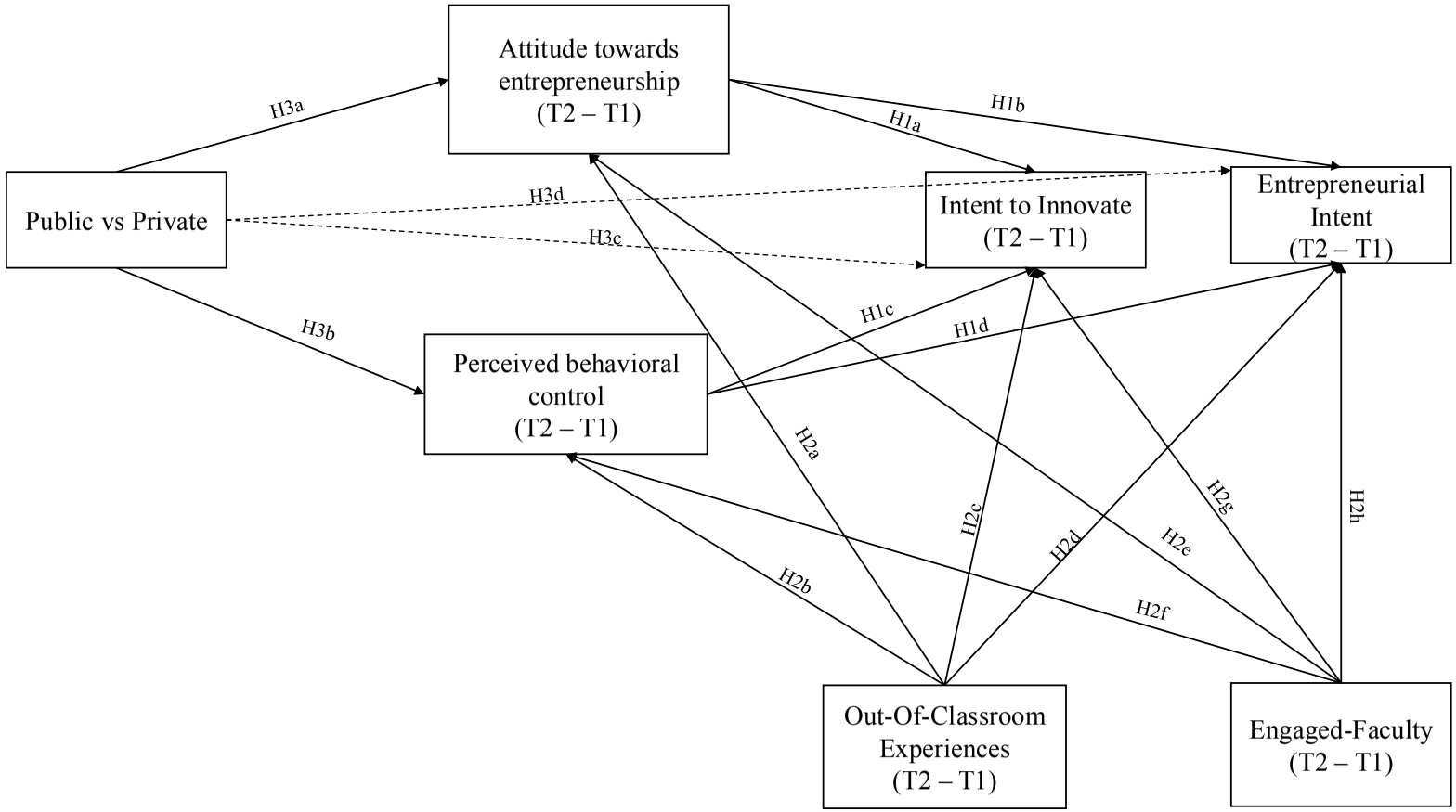


Figure 5.2: Theoretical Model with Hypothesized effects of out-of-class-experiences and engaging-faculty across private versus public universities

who undertake elective entrepreneurship education are separated from those who undertake compulsory entrepreneurship education show a significant "gain from training" regarding those who undertake compulsory entrepreneurship education (Martinez et al. 2010). In addition, most impact studies from Nigeria where compulsory courses in entrepreneurship are in place across public and private universities suggest a positive impact on intention (See Table 5.1).

Furthermore, empirical studies based on the Theory of Planned Behavior broadly confirm that attitudes towards entrepreneurship and perceived behavioral control mediate the effects of compulsory entrepreneurship education on intentions. Also, they confirm the theory's predictions regarding these mediators and entrepreneurship intentions (Arranz et al. 2017; Rauch and Hulsink 2015; Souitaris, Zerbinati, and Al-Laham 2007). However, to confirm whether this relationship is also true for innovative intentions in the Nigerian context, we suggest:

H1a Change in attitude towards the act of entrepreneurship positively relates to change in intention to innovate

H1b Change in attitude towards the act of entrepreneurship positively relates to change in entrepreneurial Intent

H1c Change in perceived behavioral control positively relates to change in intent to innovate

H1d Change in perceived behavioral control positively relates to change in entrepreneurial intent

5.3.4 *Experiential Pedagogy: Engaging-Faculty and Out-of-Class Experience*

Implicitly, scholars agree that experiential learning-based teaching practices have emerged as most appropriate practices for innovative outcomes such as intent to innovate (Mayhew et al. 2012; Arranz et al. 2017; Rauch and Frese 2007; Neck and Greene 2011; DeTienne and Chandler 2004; Souitaris, Zerbinati, and Al-Laham 2007; Solomon and Matlay 2008; Solomon, Duffy, and Tarabishy 2002; Kuratko 2005; Fayolle, Gailly, and Lassas-Clerc 2006a; Gartner and Vesper 1994; Mitchell and Chesteen 1995). Some scholars describe such teaching practices as active learning, collaborative learning, engaged learning, active pedagogy (e.g., Dakung et al. 2017), subjectivist and interactionist paradigms (Nabi et al. 2017). However, we argue that the term *experiential pedagogy* is most appropriate because these teaching practices are consistent with the experiential learning theory (Kolb 1984). The three keywords in our definition of experiential pedagogy are engagement, action and reflection (Figure 6.4) have been linked to higher outcomes regarding cognitive skills (Kolb 1984; Holman, Pavlica, and Thorpe 1996). John Dewey echoes this point, by noting that active pedagogy precedes passive ones in the development of an individual (Dewey and Small 1897, p.79).

The implicit logic in this growing consensus is that there is a directly proportional relationship between experiential pedagogy and innovative outcomes. This implicit logic is reasonably supported by empirical evidence (Mayhew et al. 2012; Rauch and Frese 2007; DeTienne and Chandler 2004; Souitaris, Zerbinati, and Al-Laham 2007; Solomon and Matlay 2008; Solomon, Duffy, and Tarabishy 2002; Kuratko 2005; Fayolle, Gailly, and Lassas-Clerc 2006a; Gartner and Vesper 1994; Mitchell and Chesteen 1995). An empirical study by Mayhew et al. (2012) report that experiential pedagogy is linked to intent to innovate.

Experiential pedagogy, as shown in Article1, involves out-of-class experiences, engaged faculty, student engagement and practice-oriented curriculum. It requires considerable time and effort to facilitate learning within and beyond the classroom. Facilitating learning within and beyond the classroom requires meaningful interactions between faculty and students, encouraging collaborations with diverse groups, and providing frequent and substantive feedback (NSSE 2014). And faculty staff have the responsibility to create an environment for students to *engage* in the learning by taking *actions* and *reflecting* on the outcomes. Extant literature indicates that such a learning environment has a higher potential to cultivate greater outcomes in terms of entrepreneurial intention or an intent to innovate (Neck and Greene 2011).

Accordingly, this study posits experiential pedagogy as a function of out-of-class-experiences and engaging-faculty. Out-of-class experiences refer to co-curricular and extra-curricular activities that students participate outside a traditional classroom environment at the same time as their primary program of study (Mayhew et al. 2012). Students who participate in out-of-class experiences are more competent with higher levels of cognitive skills and self-management skills than those who do not (Sitra and Sasidhar 2005). As a result, Mayhew et al. (2012) argue that out-of-class experiences provide opportunities to acquire further knowledge associated with becoming a confident businessperson. By connecting out-of-class experiences and in-class experiences, students can make combinations that may lead to innovative ideas (Arranz et al. 2017). Therefore, we argue that out-of-class experiences will be associated with changes in intent to innovate. Thus:

> H2a Out-of-Class experiences have positive effect on the change in attitude towards the act of entrepreneurship.

H2b Out-of-Class experiences have positive effect on the change in perceived behavioral control.

H2c Out-of-Class experiences have positive effect on the change in Intention to innovate.

H2d Out-of-Class experiences have positive effect on the change in entrepreneurial intent.

Engaging-faculty refers to faculty that creates a challenging learning environment where students challenge their ideas, think outside the box to solve problems, and are inspired to be innovative and creative (Mayhew et al. 2012). An example of engaging-faculty is a practicing entrepreneur in a classroom who shares his experiences of *doing entrepreneurship*. We consider engaging-faculty to be a reasonable and appropriate variable of experiential pedagogy especially in emerging countries where large class sizes, high student to staff ratio and low financial budgets characterize universities (WENR 2017). Engaging-faculty is quicker, easier and cheaper to implement than out-of-class experiences (NSSE 2014).

Engaging-faculty creates learning environments that break down the boundaries between the university and the outside world (Arranz et al. 2017); thereby inspires students to change their attitudes towards entrepreneurship and their beliefs about the availability of resources (Souitaris, Zerbinati, and Al-Laham 2007). As Souitaris, Zerbinati, and Al-Laham (2007) report, the probability that students will pursue a career in entrepreneurship increases when they are inspired. This point is echoed by Dakung et al. (2017), who find that the more lecturers inspire students when teaching entrepreneurship, the more their entrepreneurial action. Based on this logic we propose the following hypotheses:

H2e Engaging faculty have positive effect on the change in attitude towards the act of entrepreneurship

H2f Engaging faculty have positive effect on the change in perceived behavioral control

H2g Engaging faculty have positive effect on the change in intent to innovate

H2h Engaging faculty have positive effect on the change in entrepreneurial intent

5.3.5 *Effect of University type -Public Versus Private University*

In most emerging countries, public universities are characterized by large class sizes, high staff-to-student ratio and other resource constraints (Nkomo 2015; George et al. 2016). As a result, implementing experiential pedagogy is less frequent in public universities than in private universities as evidenced in Sections 5.4.1.1 on page 156 and 5.4.1.3 on page 158 respectively. As previously discussed, experiential pedagogy raises entrepreneurial intentions (Dakung et al. 2017; Arranz et al. 2017; Mayhew et al. 2012). Therefore it is plausible to argue that if a private university applies experiential pedagogy in entrepreneurship education than a public university, the entrepreneurial outcomes regarding intention to innovate, may be more in private universities than in public universities.

However, evidence of the effects of type of university on entrepreneurial intention is mixed. Pihie, Bagheri, and Sani (2013) find that Malaysian students from private universities had higher entrepreneurial intention than their counterparts from public universities. In contrast Canever, Barral, and Ribeiro (2017) report that the university environment, whether public or private, discourages entrepreneurial intention. One reason for the mixed evidence may be attributed to the socioeconomic

background of the student, quality of students, education resources and staff-to-student ratio among others. A more measurable reason for this mixed evidence is that in developing countries, the levels of experiential pedagogy vary across public and private universities (Canever, Barral, and Ribeiro 2017). Public universities use less experiential pedagogy than public universities, in part due to financial constraints and class sizes (Nkomo 2015; George et al. 2016). In Brazil, for instance, private universities provide more opportunities for practical lessons in entrepreneurship than public universities (Perim 2015). As previously discussed, experiential pedagogy raises entrepreneurial intentions (Dakung et al. 2017; Arranz et al. 2017; Mayhew et al. 2012). Therefore, because of the differences in the level of experiential pedagogy across public and private universities, ceteris paribus, changes in entrepreneurial attitudes and innovation intents from compulsory entrepreneurship education are likely higher in private universities than in public universities (Dakung et al. 2017; Arranz et al. 2017; Mayhew et al. 2012). Thus, we hypothesize that:

> H3a Students in Private Universities will have greater change in attitude towards the act of entrepreneurship after compulsory entrepreneurship education than students in Public universities.
>
> H3b Students in Private Universities will have greater change in perceived behavioral control after compulsory entrepreneurship education than students in Public universities.
>
> H3c Students in Private Universities will have greater change in intent to innovate after compulsory entrepreneurship education than students in Public universities.

H3d Students in Private Universities will have greater change in entrepreneurial intent after compulsory entrepreneurship education than students in Public universities.

5.4 METHOD

The analysis of EE impact studies (see section 5.2.1.2) indicate that many studies suffered from methodological weaknesses. Methodological weaknesses usually result from using small group sizes, short (duration) entrepreneurship programs (Fayolle and Gailly 2015), from cross-sectional/ex-post analyses instead of longitudinal pre-post, and quasi-experimental test designs; and the lack of control or comparison groups. This study aims to overcome these constraints and demonstrate an improved methodology in comparison to some previous studies.

First, the policy of compulsory course in entrepreneurship throughout Nigerian Higher Education creates a condition for a 'natural experiment.' Second, we adopted a quantitative research approach with a longitudinal/pretest-posttest research design to investigate the changes in entrepreneurial intention and intent to innovate across private and public universities. Longitudinal research with repeated measures design allows a researcher to identify and quantify the direct impact of the education program on the participant regardless of selection bias and previous background (Lorz 2011). Such a design has much stronger power to detect or predict effects than cross-sectional/independent designs used in most impact studies (Field 2013).

Table 5.2: Pre-Post Quasi-Experimental Design

Comparing treatment across two groups	Private Universities	O_1	X	O_2
	Public University	O_1	X	O_2

Where X is the *compulsory education* factor

However, there is the subtle problem of *a testing effect* with pretest-posttest designs because changes over time may be a consequence of measurement itself. The first measurement may get respondents to reflect on their initial answers, and this can lead to them answering differently the next time - not because of the intervention itself, but because they have been measured before. Thus the process of measurement itself becomes a kind of intervention, but one that cannot easily be directly assessed (Easterby-Smith, Thorpe, and Jackson 2012). Also, this design is prone to systemic variation. Two main sources of systemic variations are *practice effects* (where participants perform differently in the second measurement because of familiarity with the measures being used); and *boredom effects* (where participants may perform differently in the second measurement because they are tired or bored from having completed the first measurement Field (2009).

Nonetheless, natural experiments with pretest-posttest design share some of the advantages of experimental methods such as validity, clarity and transparency and repeatability. Therefore, it can be considered to be a high standard of methodological rigor for entrepreneurship education research (Meyer 1995; Martin, McNally, and Kay 2013).

In line with the research design, the study used a questionnaire to collect data and employ Structural Equation Modeling to conduct a path analysis and test hypotheses concerning the relationship between variables. Three reasons justify this approach. First, it is consistent with epistemological assumptions about the nature of intention. Second,

the nature of the research questions is consistent with quantitative research. As Creswell points out, "quantitative research question inquire about the relationships among variables that the investigator seeks to know" (Creswell 2013, p.143). Research questions one to three are about the relationship between variables education, pedagogy, intention, and its antecedents. Third, previous studies that have examined intention espouse quantitative research evidenced by testing hypotheses (see table 5.3). Moreover, a pretest-posttest design is consistent with the hypothesis of the changes in entrepreneurial intention and intent to innovate and their antecedents.

5.4.1 *Sample Description*

The sample included a randomly selected group of second-year students undertaking a compulsory entrepreneurship course at one public university - the University of Ibadan, and two private universities - Pan Atlantic University and Covenant University. All three universities are located in the Western region of Nigeria. Although the course, which takes place over one semester does not count towards students' GPA, students must pass it to graduate. The universities were selected because the authors were able to negotiate access through their contacts at the universities (Saunders, Lewis, and Thornhill 2009). Each University has a business school and a dedicated Center for Entrepreneurship Development that coordinates the entrepreneurship course across the university. All three universities reflect the common challenges faced by public and private universities such as class sizes and limited financial and infrastructural resources to support high levels of experiential pedagogy. These reasons increase the generalizability of the results of this study beyond the universities that were selected.

Article	Onto-epistemology	Design	Method	Relationships Investigated
Rauch and Hulsink (2015)	Post-positivism (suggests intention is an objective phenomena that can be measured)	Quantitative Hypothesis Quasi Experiment (Pre-post test Comparison)	Hypothesis testing; Survey; Sample size of 153 pre-test, 142 post test	Entrepreneurship Education on Attitude towards Entrepreneurship, Perceived Behavioral control, Intention and Entrepreneurial Behavior
Gielnik et al. (2015)	Post-positivism (suggests intention is an objective phenomena that can be measured)	Quantitative Hypothesis Quasi Experiment (Pre-post test Comparison)	Hypothesis testing; Survey; Sample size of 153 pre-test, 142 post test	Entrepreneurship Education on Attitude towards Entrepreneurship, Perceived Behavioral control, Intention and Entrepreneurial Behavior
Mayhew et al. (2012)	Post-positivist	Quantitative	Survey and interview. Sample size of 384	Action-Based Entrepreneurship Training on business opportunity identification, entrepreneurial action and business creation
Marvel and Lumpkin (2007)	Post-positivist	Quantitative	Survey; sample size 3700	Entrepreneurship course and pedagogical strategies and their links to intention to innovate
Pihie, Bagheri, and Sani (2013)	Post-positivism (views opportunity as an objective phenomena - "Recognizing opportunities is often like solving puzzles")	Quantitative Hypothesis	Hypothesis testing; Survey; Sample size 145	Technology Entrepreneurs' Human Capital -Education, experience and prior knowledge , effects on innovation radicalness
Fayolle, Gailly, and Lassas-Clerc (2006a)	Post-positivism (examined causal relationship between cognition and intention)	Quantitative	Survey; Sample size 722	Knowledge of cognition and entrepreneurial intentions across public and private university
Oosterbeek, Praag, and Ijsselstein (2010)	Post-positivist/ Pragmatist	Quantitative Experiment	Survey; Pilot study with 20 students	Entrepreneurship Education on Attitude towards Entrepreneurship, Perceived Behavioral control, intention
Solomon and Matlay (2008)	Post-positivism	Quantitative with Pre and post	Survey and EScan*	Entrepreneurship education on entrepreneurship skills and entrepreneurial intention
Li, Wu, and Wu (2008)	Constructivist/ Interpretivist	Qualitative	Semi-structured, in-depth telephone interviews of 64 graduate entrepreneurs	Entrepreneurship education on entrepreneurial outcomes
Lüthje and Franke (2003)	Post-positivist	Quantitative	Hypothesis testing; Survey; Structural equation modeling	Higher education on entrepreneurial intentions

* = Escan is a validated self-assessment test based on 114 items (questions and statements) posed to individuals Oosterbeek, Praag, and Ijsselstein (2010).

Table 5.3: onto-epistemology, Design and Methods of Related Studies

5.4.1.1 *Public University - The University of Ibadan*

The University started in Ibadan as an independent external college of the University of London, in 1948. The University of Ibadan became an independent Federal (public) university in 1962. The university is the oldest in Nigeria and has many established faculties; it is a teaching and research institution. By 2018, the University has a student population of 26,783, a student to staff ratio of 17:1; females to males ratio of 47:53 and 1% of international students (THE 2018b). The University of Ibadan is the highest-ranking university in Nigeria and the only Nigerian University in the overall Times Higher Education World University Rankings THE (2017). The University was one of the earliest public universities to implement the Federal Government's policy of compulsory entrepreneurship education in 2008. As a result, it has a number of experienced faculties and curriculum. However, like most Federal Universities, the challenges the University face includes large class sizes and limited financial and infrastructural resources to support high levels of experiential pedagogy.

The University of Ibadan established a Centre for Entrepreneurship and Innovation (CEI) in 2002 which is responsible for teaching and research in entrepreneurship and innovation and highlights the direct relevance of the university to its environment and society at large. CEI currently runs the entrepreneurship course for the University of Ibadan which is a taught 300 Level course (third year). The average class size for the entrepreneurship course is 650.

The aim of the compulsory course is to cultivate an entrepreneurial mindset. The course also seeks to equip students with the skills required to establish their businesses. It provides students with the fundamental knowledge of entrepreneurship and new venture creation. (CEI 2018a).

PEDAGOGY For the compulsory course in entrepreneurship, the University of Ibadan relied heavily on traditional lecture pedagogy. Most of the faculty are from various departments within the university such as Medicine, Sciences and Engineering. Some of the faculty are academic entrepreneurs. External speakers are seldom invited. The title of one of the curricula content is "Case Study and Case Methodology in Business Study." However, the delivery of the class did not include the use of case studies. The average class size is 650 students. The exam at the end of the course is multiple-choice questions. There are limited opportunities for experiential learning.

After completing this compulsory course, students are encouraged to take an elective course to further develop their understanding and skills. This further course takes students through the rudiments of starting a business which includes the drawing up of business plans (CEI 2018b). The business plans are assessed for feasibility and viability. CEI also runs a funding scheme that provides seed capital for viable business plans written by students. This enables students to have hands-on experience and to see their business idea become a reality. In other words, the implicit objective of the course is for venture creation.

5.4.1.2 *Private University - Covenant University*

Covenant University operates as a fully licensed private university since 2002. As a private university, it does not depend on or receives any of its funding from the government. Covenant University was among the earliest universities to deliver a course in entrepreneurship before the government's directive on entrepreneurship education in 2007 with the object to "consciously create job creators not job seekers" (CEDS 2018). Covenant University has a population of 9,411 students,

0% international students, student to staff ratio of 18:1 and female to male ratio of 37:63 (THE 2018a).

Just like the University of Ibadan, Covenant University established Centre for Entrepreneurial Development Studies (CEDS) which organizes the entrepreneurship course. The vision of the center is to empower Covenant University graduates entrepreneurially in a bid to make them productive and contribute significantly toward national socio-economic and human development (CU 2018). The compulsory entrepreneurship course is designed with the aim of making every student an entrepreneur Moses et al. 2015.

PEDAGOGY CEDS ensures and coordinates the smooth running of the course by the university. The entrepreneurship course has both a theoretical and practical focus in its pedagogy. On the theoretical side, the program relies on traditional lectures that are delivered by faculty staff from the university. The average class size for the entrepreneurship is 1800. External speakers and practicing entrepreneurs are also invited to the classroom. On the practical side, students are given the opportunity to undertake brief apprenticeship (skills acquisition activities) at some local businesses as part of the course. Some of the businesses where students get hands-on experience include food processing; wood, pulp and paper technology; agriculture; fish farming; snail farming; and ICT training. The university also provides funds for business plans and provides avenues for venture capital firms to provide seed funding for students' business plans. Apart from these specific courses, the university provides further entrepreneurship training for all its students on an elective basis. There are also opportunities for extra-curricular activities through seminars and student entrepreneurship clubs that promote entrepreneurial learning.

5.4.1.3 *Private University - Pan-Atlantic University*

Pan-Atlantic University has a student population of 757 and a student to staff ratio of 11:1 (PAU 2017). The class size for the entrepreneurship course is 80.

PEDAGOGY Their pedagogy includes the use of guest speakers and practitioners in the classrooms. The course utilizes practice-oriented pedagogies that are grounded in the experiential learning theory. For example, groups of students are given seed capital of approximately $250 for student start-activity as part of the course. They are expected to register their business, open a bank account, mobilize additional funds and run the business throughout the semester. All the businesses participate in a one-day exhibition which is opened to the general public. This activity is very popular among students and staff of the university. On the pedagogy categorisation scale (see chapter 6), student start-up activity is considered as a transformational —highly experiential— pedagogy. (For a detailed explanation of Pan-Atlantic University and its pedagogy, see Section 4.4.1 of study one)

5.4.2 *Questionnaire Development*

The discussions above suggest that there may be differences in the pedagogy used in public and private universities. Public universities tend to use low experiential pedagogy while private universities tend to use highly experiential pedagogy. In the public university, the entrepreneurship course was delivered mostly by academics from various disciplines within the university, while in the private universities, external and practicing entrepreneurs were invited to deliver some lectures. At the end of the course in the public university, students

completed a multiple-choice exam to assess their learning; whereas in the private universities, students completed an essay type assessment in the form of an exam. Besides, unlike the public university, private universities engage students in practical entrepreneurial activities including student start-up exercise or skills acquisition activities.

Since our study was set up to capture the changes in the intention to innovate across public and private universities, the sample was grouped by university type and data was collected over two measurement waves (T1 & T2). The questionnaire used was adapted from extant literature. The main constructs of the theory of planned behavior and innovative intentions have been used in previous studies (Liñán and Chen 2009; Lüthje and Franke 2003; Rauch and Hulsink 2015; Autio et al. 2001; Mayhew et al. 2012). Rauch and Hulsink (2015) used Liñán and Chen (2009) scale for entrepreneurial intention, perceived behavioral control and attitude towards entrepreneurship. Mayhew et al. (2012) developed a scale for measuring innovative intentions.

The questionnaire is structured into five sections (see Appendix A.3): Section A has 5 questions (questions 1-5). Question 1 assesses entrepreneurial behavior. Question 2 assess entrepreneurial intention. Questions 3- 5 assesses innovative intention. During analyses, questions 4 and 5 in this section could not form a reliable scale Cronbach's $\alpha \prec 5$ and were subsequently dropped from the analyses. Section B has 2 questions (questions 6-7) that evaluate the antecedents of intentions. Question 6 assesses attitudes towards entrepreneurship. Question 7 assesses perceived behavioral control. Section C has 6 questions (questions 8-14) examining experiential pedagogical factors including such as faculty engagement (question 8), nature of assessments (question 9 and 10), students exposure to leadership experiences (question 11) and out-of-class experiences (question 12) and other experiential pedagogy applied (questions 13 and 14). The scales for assessment

and leadership were found to be unreliable and consequently were removed from this study. Section D (question 15) assesses the university environment. Section E (questions 16-28) collects data about the respondents' background concerning demographics, gender prior exposure to entrepreneurship and study program.

Before data collection at T1, a pilot study was conducted with 5 academics and 90 non-participating students. The purpose of this was to ensure the clarity of working, as well as the face validity of constructs (Souitaris, Zerbinati, and Al-Laham 2007). After incorporating the feedback into the questionnaire, a further review was conducted with another expert in this field to increase criterion validity. The questionnaire (see Appendix A.3) was then used as the master questionnaire for the measurement of the experimental groups.

We clearly explained to all surveyed students that the questionnaires were for research purposes only, participation was voluntary and personal information that will identify an individual, such as name and email address was not collected. For the first measurement wave (T1), questionnaires were distributed and collected on the same day during the second week of the course. This was repeated one month after the end of the course for the second measurement wave (T2).

5.4.3 *Data Collection*

We collected data from all three universities from October 2016 to March 2017. For Covenant University, T1 and T2 measurements took place in October 2016 and March 2017. For the University of Ibadan, T1 and T2 measurements took place in October 2016 and February 2017; for Pan-Atlantic University, T1 and T2 measurements occurred in October and March (before their annual Entrepreneurship Day event) respectively.

In line with the theoretical model for our study, samples from Covenant University and Pan-Atlantic University were grouped as *private university* while samples from the University of Ibadan were grouped as *public university.* Both private and public university groups were selected randomly on the day the questionnaires were distributed at T1 and T2 measurements.

The total sample at T1 was 379 (235 in UI, 38 in PAU and 106 in CU); At time T2 more people were willing to complete the questionnaire. So we collected a total of 396 samples (219 in UI, 73 in PAU and 104 in CU) at T2. After data screening 24 were removed from T2 sample because they had missing data and unengaged responses reducing the sample size at T2 to 396. Using email, age, and gender, we were able to identify and match 361 samples (219 in UI, 38 in PAU, and 104 in CU) who completed the questionnaire both at T1 and T2. Both at time T1 and time T2, the questionnaire measured intentions and its antecedents (entrepreneurial intention, intention to innovate, attitudes, perceived behavioral control), and experiential pedagogy (which is a function of out-of-class experiences and engaged faculty). A follow-up assessment for entrepreneurial behavior was not feasible for this study, in part due to the limitation of time and because the effects of entrepreneurship education on behavior are delayed (Kolvereid 1996a).

5.4.4 *Measures/ Variable Operationalization*

All the scales were tested for reliability and validity. The data confirmed the reliability of all scales with Cronbach's $\alpha \succ 0.7$. As evidence of convergent validity, all the instruments loadings were greater than 0.5. Each scale had a minimum of four items and all of them loaded on a single factor in exploratory factor analysis.

5.4.4.1 *Explained Variables*

In line with the theoretical framework, the two explained variables for this study are intent to innovate and entrepreneurial intention.

Intent to innovate was measured by the extent to which people seriously considered to identify and pursue new business-related opportunities such as a new product or service that is not currently available or a more effective way of producing such product or providing such service. Four items from Mayhew et al. (2012) were used for this (See Table 5.4). These items were in a five-point 'Likert Scale' ranging from *'extremely ineffective'* to *'extremely effective.'* A sample item was 'please indicate how effective you are in ... identifying new opportunities (such as a new product or service a more effective way of accomplishing tasks, or a new way to solve a common social problem).' The data confirmed the reliability of the scale (Cronbach's α = 0.74 at T1 and 0.84 at T2). All the items loaded on one factor in the EFA.

Table 5.4: Scale for Intention to Innovate

3. Please indicate how effective you are in each of the following areas:

	Extremely Ineffective	Somewhat Ineffective	Neither Ineffective nor Effective	Somewhat effective	Extremely Effective
Identifying new opportunities (such as a new product or service a more effective way of accomplishing tasks, or a new way to solve a common social problem)	O	O	O	O	O
Developing a strategy to direct your and others' efforts in the direction of realizing new opportunities (such as developing an action plan).	O	O	O	O	O
Acquiring resources necessary to realize a new opportunity (such as area/topic expertise).	O	O	O	O	O
Creating an entity to take advantage of a new opportunity (for example, an organization devoted to the new opportunity).	O	O	O	O	O

To assess *entrepreneurial intention,* six items from Liñán and Chen (2009) were used (See Table 5.5). A sample was 'I am ready to do anything to be an entrepreneur.' Responses were given on a 7 point

Table 5.5: Scale for Entrepreneurial Intention

1. On a scale of 1 to 100 how likely do you consider it to be that you will be running your own firm within five years from now? *The higher the number the higher the likelihood.* Write the number below.

   ☐

2. Indicate your level of agreement with the following statements from 1 (***total disagreement***) to 7 (***total agreement***)

	1	2	3	4	5	6	7
I am ready to do anything to be an **entrepreneur**	O	O	O	O	O	O	O
My professional goal is to become an **entrepreneur**	O	O	O	O	O	O	O
I will make every effort to start and run my own firm	O	O	O	O	O	O	O
I am determined to create a firm in the future	O	O	O	O	O	O	O
I have very seriously thought of starting a firm	O	O	O	O	O	O	O
I have the firm intention to start a firm some day	O	O	O	O	O	O	O

Likert scale from absolutely disagree to absolutely agree. The data confirmed the reliability of the scale (Cronbach's α = 0.90 at t1 and 0.94 at t2). To cover the behavioral expectation associated with intentions one single item suggested by Davidsson (1995), Krueger, Reilly, and Carsrud (2000) and Van Gelderen et al. (2008) as well as adopted in Rauch and Hulsink (2015) was used: 'How likely do you consider it to be that you will be running your own firm within five years from now?' The respondents indicated the likelihood between 0 and 100.

5.4.4.2 *Explanatory Variables*

Attitude towards entrepreneurship was measured using five items from Liñán and Chen (2009). A sample question was 'Being an entrepreneur implies more advantages than disadvantages to me' (See Table 5.6). The responses were given on a 7-point scale. The data confirmed the reliability of the scale (Cronbach's α = 0.89 at t1 and 0.92 at t2).

Table 5.6: Scale for Attitude Towards Entrepreneurship

6. Indicate your level of agreement with the following sentences from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
Being an entrepreneur implies more advantages than disadvantages to me	O	O	O	O	O	O	O
A career as entrepreneur is attractive for me	O	O	O	O	O	O	O
If I had the opportunity and resources, I'd like to start a firm	O	O	O	O	O	O	O
Being an entrepreneur would entail great satisfactions for me	O	O	O	O	O	O	O
Among various options, I would rather be an entrepreneur	O	O	O	O	O	O	O

Perceived behavioral control was assessed by the extent to which people rate a business opportunity as feasible and feel they can influence the outcome (Rauch and Hulsink 2015). Four 7-point items from Liñán and Chen (2009) were used (See Table 5.7. One item was 'I can control the creation process of a new firm.' The answers ranged from 1 to 7. The data confirmed the reliability of the scale (Cronbach's α = 0.84 at t1 and 0.88 at t2)

Table 5.7: Scale for Perceived Behavioral Control

7. To what extent do you agree with the following statements regarding your entrepreneurial capacity? Value them from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
To start a firm and keep it working would be easy for me	O	O	O	O	O	O	O
I am prepared to start a viable firm	O	O	O	O	O	O	O
I can control the creation process of a new firm	O	O	O	O	O	O	O
If I tried to start a firm, I would have a high probability of succeeding	O	O	O	O	O	O	O

Two factors were assessed under *experiential pedagogy*. They were *engaging-faculty* and *out-of-class-experiences*. These factors were adapted from Mayhew et al. (2012) who describe engaging-faculty as 'Challenging Learning Environment' and out-of-class-experiences as 'Connecting experiences.' We changed these descriptions to reflect what

they capture. We argue that the description *'Challenging Learning Environment,'* can be misleading because creating a challenging learning environment involves other variables such as curricular design course structure and resources beyond a faculty's means. Moreover, the individual items of the factor describe a faculty that actively engages an audience whereas This same logic also applies to 'Connecting experiences.' *Out-of Class-Experiences* is arguably more straight forward than 'Connecting Experiences'.

As shown in Table 5.8 *Engaging-faculty* was assessed using 5 items with the responses given on a 5 point scale from strongly disagree to strongly agree. An example question is 'Faculty challenge me to think outside of the box to create solutions to problems presented in class.' (Cronbach's α = 0.84 at t1 and 0.88 at t2). Out-of-class-experiences was assessed using four items from Mayhew et al. (2012). As Table 5.9 indicates, measurement items used were based on a 5 point Likert scale and responses ranged from 1 (strongly disagree) to 5 (strongly agree). A sample was 'My out-of-class experiences had a positive influence on my intellectual growth and ideas.' The data confirmed the reliability of the scale (Cronbach's α = 0.84 at t1 and 0.88 at t2)

Table 5.8: Scale for Engaged Faculty

8.Indicate your level of agreement/disagreement with each of the followings statements:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Faculty challenge me to think outside of the box to create solutions to problems presented in class	O	O	O	O	O
Faculty ask me to show how a particular course concept could be applied to an actual problem or situation	O	O	O	O	O
Faculty ask me to point out any fallacies in basic ideas, principles, or points of view represented in the course	O	O	O	O	O
Faculty ask me to argue for or against a particular point of view	O	O	O	O	O
Faculty encourage me to explore original ideas	O	O	O	O	O

5.4.5 *Controls*

Various control variables were included in the measurement model to isolate the effect of the independent variables. First, gender was controlled because previous studies have indicated that men are more likely to develop the intention to start a business venture than women (Brush 1992; Kolvereid and Moen 1997). Gender effects were captured with a dummy variable for being male (1 = male, 0 = female).

Table 5.9: Scale for Out-of-Class Experiences

12. Indicate your level of agreement/disagreement with each of the followings statements:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
My out-of-class experiences had a positive influence on my intellectual growth and ideas	O	O	O	O	O
My out-of-class experiences had a positive influence on my personal growth, attitude, and values	O	O	O	O	O
My out-of-class experiences helped me to connect what I learned in the classroom with life events	O	O	O	O	O
My out-of-class experiences helped me translate knowledge and understanding from the classroom into action	O	O	O	O	O

Second, age was controlled because it has been related both to intentions (Morris and Venkatesh 2000) and entrepreneurial behavior (Reynolds 1987). Older individuals are less likely to engage in entrepreneurship because of increased levels of opportunity costs associated with it (Levesque and Minniti 2006).

Third, entrepreneur kin can serve as role models (Scherer et al. 1989), serve as a source of entrepreneurial know-how (Tervo 2006), and increase entrepreneurship behavior (Bosma et al. 2012; Chlosta et al. 2012). As Rauch and Hulsink (2015) note, there are several reasons why having entrepreneur kin might increase the probability that a given individual turns to entrepreneurship. Entrepreneur kin might offer informal induction in business methods, transfer business networks, consultancy and reputation. Furthermore, from the child's perspective,

the potential of inheriting a family business might be a motivating factor to pursue entrepreneurship, for instance in agriculture where parents pass on their farms to their children. We, therefore, included two separate dummy variables for having an entrepreneur parent (1 = entrepreneur, 0 = otherwise).

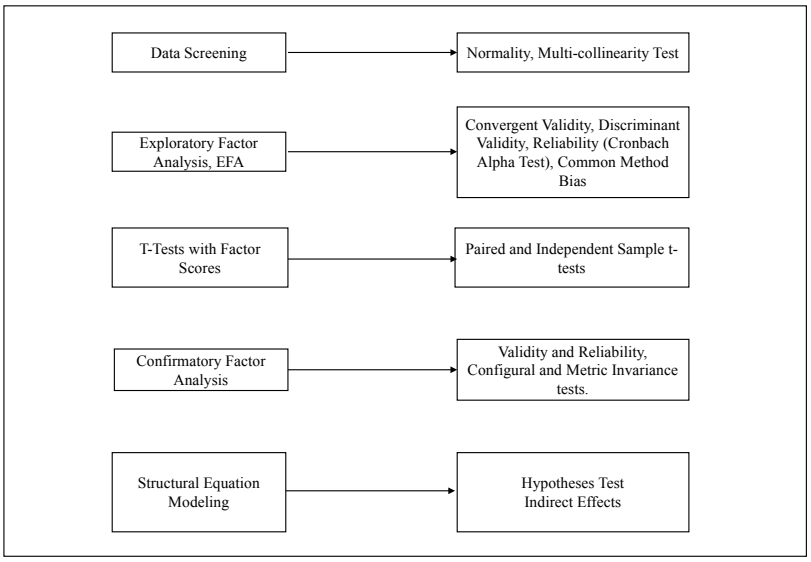
5.5 ANALYSIS

Data was analyzed using AMOS (Analysis of Moment Structures) 25^{TM} and SPSS (Statistical Package for the Social Sciences) 24^{TM}. With AMOS, a researcher can easily use structural equation modeling (SEM) to test hypotheses on complex variable relationships and gain new insights from data. Due to the complex relationship of the variables in this study, SEM was used to test all the hypotheses simultaneously. Figure 5.3 provides an overview of the sequence of procedures undertaken for the data analysis. The choice of statistical analyses used to test the hypotheses is based on the appropriateness for research design and nature of hypotheses; and in accordance with statistical tests conducted in scientific articles that were undertaken in comparable situations and published in high-ranking journals (e.g. Souitaris, Zerbinati, and Al-Laham 2007; Fayolle and Gailly 2015; Rauch and Hulsink 2015; Martins and Kellermanns 2004; Luthans, Avey, and Patera 2008).

5.5.1 *Preliminary Tests*

To ensure that the data is appropriate for analysis the following preliminary tests were conducted. First, variables were checked for their applicability for parametric analysis methods. As Table 5.10 indicates,

Figure 5.3: Data Analysis Steps



there is no evidence of Skewness[1] (values between -2 to +2) and Kurtosis[2] (values less than 3). The common problem of collinearity of independent variables was examined. No evidence of multicollinearity, as the correlations between independent variables were moderate, Variable Inflation Factor (VIF) for each independent variable after running a multivariate regression were all less than 3, and the tolerance values were all greater than 0.35.

Second, reliability[3] and validity[4] were assessed using Exploratory Factor Analysis (EFA). To achieve high reliability, only scales that have been previously utilized in similar studies (Liñán and Chen 2009; Rauch and Hulsink 2015; Mayhew et al. 2012) that are published in reputable peer-reviewed journals were used. All the constructs were

1 Skewness indicates the symmetry of the distribution. A value of 0 represents a perfect normal distribution. A negative value indicates the distribution to be on the left side on the histogram. However, "since virtually all distributions of real data are skewed, what really matters is how much" (Bernard and Bernard 2012, p. 522). Therefore -2 to +2 is deemed acceptable for parametric tests and assumes a normal distribution.

2 Kurtosis measures the flatness (- values) or peakedness (+ values) of a distribution and is within the range of -2 to +2, acceptable for parametric tests.

3 Reliability refers to the capacity of a measurement scale to produce consistent results (Lorz 2011)

4 Validity refers to how well a scale measures what it sets out to measure (Litwin and Fink 1995).

measured with multiple-item scales. Each scale had a minimum of 4 items and all of them loaded on a single factor in exploratory factor analysis (See appendix 5.11). As the table indicates, all scales have Cronbach Alpha $\alpha \succ 0.7$ which indicates internal consistency and reliability. Also, all the instruments loadings are greater than .5 which is evidence of convergent validity. In summary, the analysis provided evidence to confirm the reliability and validity of the measurement instrument.

Table 5.10: Test for Normal Distribution: Descriptives for reviewing Skewness & Kurtosis

Descriptives for reviewing Skewness & Kurtosis

	EI at T1	EI at T2	I2I at T1	I2I at T2	ATA at T1	ATA at T2	PBC at T1	PBC at T2	EF at T1	EF at T2	OCE at T1	OCE at T2
Mean	5.867	5.543	3.809	3.676	6.003	5.719	4.702	4.515	3.466	3.339	4.031	3.853
Skweness	-1.360	-.977	-.955	-.764	-1.512	-1.086	-.771	-.577	-.607	-.623	-1.338	-1.066
Kurtosis	1.475	.065	1.656	.490	2.297	.582	.461	-.131	.172	.050	2.507	1.255

EI = Entrepreneurial Intention
I2I - Intent to Innovate
ATA = Attitude Towards the Act of entrepreneurship
PBC = Perceived Behavioral Control
EF =Engaged Faculty
OCE =Out of Class Experiences

Lastly, Common Method Variance (CMV) was investigated using Harman's single Factor test suggested by Podsakoff and Organ (1986). CMV test is necessary because the data for the independent and dependent variables in the model were obtained from a single source. Harman's approach is reasonably straightforward and easy to apply. Although it has been criticized as being statistically too liberal[5], it is considered to be adequate for analysis mainly because longitudinal design used in this study is one of the procedural remedies to common method bias. To use Harman's single factor technique, all the items measuring all variables of interest are loaded into a factor analysis

5 Latent factor model is considered to be statistically more conservative procedure for investigating common method bias because in addition to testing for the potential effects of common method variance, it allows measurement error in the method factor to be estimated (Podsakoff and Organ 1986; Podsakoff et al. 2003). A disadvantage of the method is that it can cause the model to be under-identified. We used a latent factor model procedure and found significant common method bias effect (X^2 Difference = 158.8; Difference in df = 27 p<001). The common latent factor was retained in new computed factor scores. The CLF dampened the results of the hypotheses. See Appendix A.5 for details.

Constructs and Items (Sources)	EI	ATA	EF	OCE	PBC	I2I	Cronbach ∝ T1	Cronbach ∝ T2	TVE*
Entrepreneurial Intention - EI, (Liñán & Chen 2009)									
I am ready to do anything to be an **entrepreneur**	.538								
My professional goal is to become an **entrepreneur**	.604								
I will make every effort to start and run my own firm	.893								
I am determined to create a firm in the future	.969						.899	.943	33.77
I have very seriously thought of starting a firm	.875								
I have the firm intention to start a firm some day	.943								
Intention to Innovate - I2I, (Mayhew et. Al. 2012)									
Identifying new opportunities (such as a new product or service a more effective way of accomplishing tasks, or a new way to solve a common social						.691			
Developing a strategy to direct your and others' efforts in the direction of realizing new opportunities (such as developing an action plan).						.730	.744	.835	2.96
Acquiring resources necessary to realize a new opportunity (such as area/topic expertise).						.706			
Creating an entity to take advantage of a new opportunity (for example, an organization devoted to the new opportunity).						.668			
Attitude Towards the Act of entrepreneurship - ATA, (Liñán & Chen 2009)									
Being an entrepreneur implies more advantages than disadvantages to me		.638							
A career as entrepreneur is attractive for me		.854							
If I had the opportunity and resources, I'd like to start a firm		.884					.891	.923	10.30
Being an entrepreneur would entail great satisfactions for me		.947							
Among various options, I would rather be an entrepreneur		.590							
Perceived Behavioral Control - PBC, (Liñán & Chen 2009)									
To start a firm and keep it working would be easy for me					.685				
I am prepared to start a viable firm					.690		.837	.880	3.84
I can control the creation process of a new firm					.888				
If I tried to start a firm, I would have a high probability of succeeding					.698				
Engaged Faculty- EF, (Mayhew et. Al. 2012)									
Faculty challenge me to think outside of the box to create solutions to problems presented in class			.696						
Faculty ask me to show how a particular course concept could be applied to an actual problem or situation			.775						
Faculty ask me to point out any fallacies in basic ideas, principles, or points of view represented in the course			.819				.844	.882	5.65
Faculty ask me to argue for or against a particular point of view			.703						
Faculty encourage me to explore original ideas			.750						
Out of Class Experiences -OCE, (Mayhew et. Al. 2012)									
My out-of-class experiences had a positive influence on my intellectual growth and ideas				.680					
My out-of-class experiences had a positive influence on my personal growth, attitude, and values				.726			.836	.876	6.01
My out-of-class experiences helped me to connect what I learned in the classroom with life events				.865					
My out-of-class experiences helped me translate knowledge and understanding from the classroom into action				.809					

*Total Variance explained = 62.53% ; Nonredndant residuals <3% ; Communalities > .4; KMO = 0.924*** (*** = Significant at p < .001)*

*Extraction Method: Maximum Likelihood; Rotation Method: Promax with Kaiser Normalization (Rotation converged in 6 iterations.); *TVE = Total Variance Explained*

Table 5.11: Exploratory Factor Analysis

and constrained so that there is no rotation. The results are examined to determine the number of factors that account for the variance in the variables. The logic of this procedure is that if a substantial amount of common method variance is present, a factor analysis should either yield a single factor or yield one general factor that will account for over 50% of the variance. For this study, the factor analysis indicated six factors with eigenvalues greater than 1. The first factor accounted for 33.77% of the variance and all the six factors accounted for 62.53% of the total variance explained. Because a single factor did not emerge, it can be concluded that common method variance is not a significant problem in the tests of hypotheses (Podsakoff and Organ 1986).

It is noteworthy that a selection bias test was unnecessary since the course being examined is compulsory for all its participants. Also, since there were more willing participants at T2, a non-response bias was unnecessary.

5.5.2 *Confirmatory Factor Analysis*

Confirmatory Factor Analysis (CFA) was conducted to a) determine the measurement model; b) evaluate the reliability and validity (convergent and discriminant) of the constructs (Fornell 1992; Fornell and Larcker 1981); c) test the measurement invariance across groups from public and private university and; d) investigate methods effect (Brown 2014). Table 5.4 shows the measurement model which represents a confirmatory factor analysis of all scales used in the study. Composite Reliability (CR) was used as a measure of internal consistency of the constructs, where values greater than .70 indicate adequate reliability (Hair, Black, and Babin 2010; Fornell and Larcker 1981; Cohen, Manion, and Morrison 2011). Convergent validity was calculated using the procedure outlined by Fornell and Larcker (1981) which involves

assessing the Average Variance Extracted, AVE[6] for each construct. AVE's $\geq$ 0.5 and lower than CR indicate convergent validity (Hair, Black, and Babin 2010). Discriminant validity was established by verifying that the Maximum Shared Variance, MSV is less than the AVE for each construct; and Square root of AVE greater than inter-construct correlations(Hair, Black, and Babin 2010). As Table 5.12 shows, there is evidence of convergent validity, discriminant validity and reliability for the measurement model.

We conducted a configural invariance test to confirm whether the measurement model achieves adequate goodness of fit when private and public university groups are tested together and freely (Steenkamp and Baumgartner 1998; Cheung and Rensvold 2002). Adequate goodness of fit was obtained as evidenced by the root mean error of approximation - RMSEA = .04, the square root mean residual - SRMR =.05; and the comparative fit index - CFI = .95. To determine whether the measurement model is the same or different between the groups of private and public university students, a metric invariance test was conducted. This test was achieved by performing a Chi-square difference test between the fully constrained and unconstrained model. The result indicates that the groups are invariant (p = .123).

5.5.3 *Hypothesis Testing*

5.5.3.1 *T-Tests*

Before testing the hypotheses with structural equation modeling, t-tests were conducted. T-tests allow researchers to compare the difference between the sample means of two groups that are exposed to

6 Average variance extracted, AVE is the variance in the indicators explained by the common factor, average trait-related variance extracted. AVE is a strict measure of convergent validity. Malhotra and Dash (2010) note that "AVE is a more conservative measure than CR. On the basis of CR alone, the researcher may conclude that the convergent validity of the construct is adequate, even though more than 50% of the variance is due to an error." Malhotra and Dash (2010, p. 702).

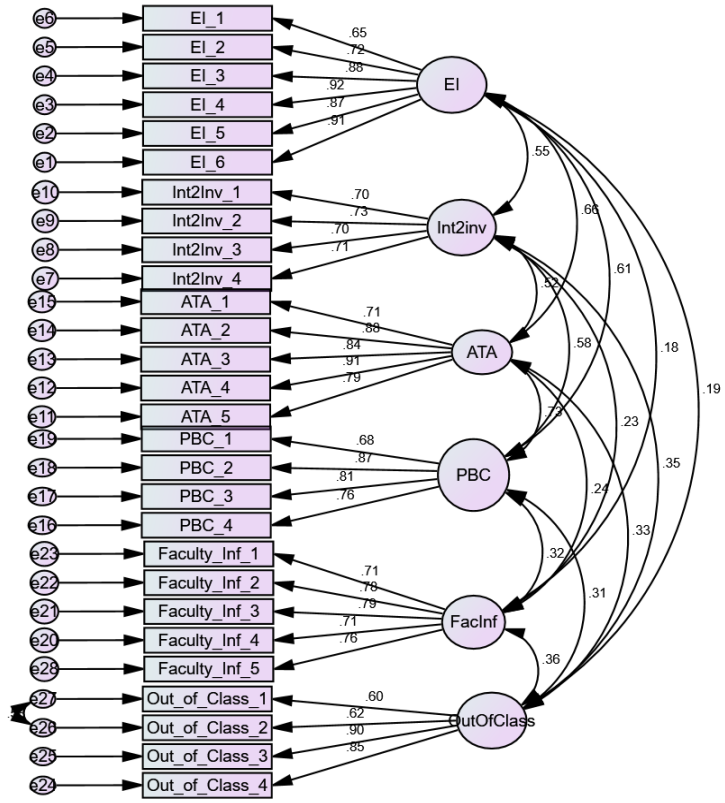


Figure 5.4: Two-dimensional Measurement Model about Entrepreneurial Intention (EI), Intention to Innovate (Int2inv), Attitude Towards the Act (ATA), Perceived Behavioral Control (PBC), Engaged Faculty (FacInf) and Out of Class Experiences (OutOcClass). *n* =722 (361 at T1 and T2)

treatments to determine the effects of the treatment across the groups Field (2009).

Paired t-test was used to compare the mean values of the impact indicators measured at T1 and T2 *within groups* of students at both public and private universities. This test investigates the change - gain

Factors	CR	AVE	MSV	MaxR(H)	EF	EI	Int2inv	ATA	PBC	OCE
EF	.88	.60	.16	.89	**.78**					
EI	.93	.69	.38	.95	.22	**.83**				
Int2inv	.82	.54	.36	.82	.21	.60	**.73**			
ATA	.92	.69	.55	.93	.29	.61	.48	**.83**		
PBC	.88	.66	.55	.90	.38	.61	.55	.74	**.81**	
OCE	.85	.59	.16	.90	.40	.17	.32	.31	.32	**.77**

Diagonal values are the square root of AVE

AVE=Average Variance Extracted
CR = Composite Reliability
MaxR = Maximum Reliability
MSV = Maximum Shared Variance

EI = Entrepreneurial Intention
EF = Engaged Faculty
Int2Inv = Intent to Innovate
ATA = Attitude Towards the Act
PBC = Perceived Behavioral Control
OCE = Out of Class Experiences

Table 5.12: Reliability and Validity For Measurement Model

or loss, from undertaking a compulsory course in entrepreneurship. The results are shown in Table 5.13. Independence sample t-test was used to investigate if there is significant variability *between groups* of students from private and public universities at T1 and T2. This test, along with structural equation modeling, investigates hypothesis 3a-d and addresses research question 1 and 3 [7]. The results are shown in Table 5.14. Table 5.15 presents the descriptive statistics and correlations of the study variables.

5.5.3.2 *Structural Equation Modeling*

Structural equation modeling (SEM) was used to test the hypotheses stated in this study. SEM allows a researcher to simultaneously combine factor analysis and linear regression models to test the hypotheses. Another benefit of SEM is the ability to test direct and indirect (mediating) effects in the one model. For the analyses, we used *difference scores*

7 Research Question: 1) Does a compulsory course in entrepreneurship education affect students' intention to innovate? 2) Can experiential pedagogy influence intent to innovate? 3) Does the impact of compulsory courses in entrepreneurship education vary across public and private universities?

	Public								Private							
Variables	*M* (T1)	*M* (T2)	*MD*	*SD* (T1)	*SD* (T2)	*SD* Diff	*t*		*M* (T1)	*M* (T2)	*MD*	*SD* (T1)	*SD* (T2)	*SD* Diff	*t*	*p*
Entrepreneurial Intent	.09	-.06	-.15	.91	1.04	1.43	-1.56	ns	-.14	.09	.23	1.04	.88	1.37	2.02	*
Intent to Innovate	.09	.04	-.05	.88	.94	1.31	-.58	ns	-.14	-.06	.08	.89	.89	1.22	.78	ns
Attitute towards the Act	.12	-.05	-.18	.84	1.01	1.33	-1.96	ns	-.19	.08	.27	1.09	.92	1.41	2.30	*
Percieved Behavioral Control	.14	.00	-.15	.92	.98	1.33	-1.63	ns	-.22	.00	.23	.91	.91	1.22	2.22	*

No of obs: Private University = 142; Public Universtity = 219 *MD* = Mean Difference; SD Standard Deviation of T-Test

Paired T-test - Mean Differences Scores Between Two Periods T1 and T2

Table 5.13: T-Test of Private versus Public University

	T1						T2						Change over time T2-T1					
Variables	*M Pub*	*M Priv*	*MD*	*SD Pub*	*SD Priv*	*t*	*M Pub*	*M Priv*	*MD*	*SD Pub*	*SD Priv*	*t*	*M Pub*	*M Priv*	*MD*	*SD Pub*	*SD Priv*	*t*
Entrepreneurial Intent	.09	-.14	.24	.91	1.04	2.27 *	-.06	.09	-.15	1.04	.88	-1.38 ns	-.15	.23	-.38	1.43	1.37	-2.53 *
Intent to Innovate	.09	-.14	.24	.88	.89	2.50 *	.04	-.06	.11	.94	.89	1.07 ns	-.05	.08	-.13	1.31	1.22	-.96 ns
Attitute towards the Act	.12	-.19	.32	.84	1.09	3.10 **	-.05	.08	-.13	1.01	.92	-1.27 ns	-.18	.27	-.45	1.33	1.41	-3.06 **
Percieved Behavioral Control	.14	-.22	.37	.92	.91	3.70 ***	.00	.00	-.01	.98	.91	-.06 ns	-.15	.23	-.37	1.33	1.22	-2.69 **

No of obs: Private University = 142; Public Universtity = 219

Paired T-test - Mean Differences Scores Between Two Periods T1 and T2

M = Mean; *MD*= Mean Difference; *Pub*= Private University; *Priv*= Private University

* p<.05; ** p<.01; *** p<001

Private university students had significantly lower PBC ATA, EI and Intent to Innovate at the beginning. This difference vanished at the end of the course. The

Table 5.14: T-Test to track changes at T1 and T2 for Public and Private Universities

to derive the changes in entrepreneurial intention, intent to innovate, attitude, perceived behavioral control, out-of-class experiences, and engaged-faculty influence. The difference score[8] is preferred because it captures a change in the variable over time and produces "equivalent results in a simpler and less confusing way" (Souitaris, Zerbinati, and Al-Laham 2007, p. 580).

To evaluate the fit of the structural model, we used the root mean square error of approximation (RMSEA), the square root mean residual (SRMR) and the comparative fit index (CFI). A model can be considered to have a good fit if the CFI value exceeds .95, the RMSEA is below .06, and the SRMR is smaller than .08 (Hu and Bentler 1999).

The specified model allowed the testing of the effects of changes in attitude and perceived behavioral control on entrepreneurial intent as well as Intent to Innovate (H1a-d). The study evaluated the direct effect of a change in the perception of out-of-class experiences on changes in attitude, perceived behavioral control, entrepreneurial intent, and intent to innovate (H2a-d); and also the direct effect of changes in perception of engaged faculty on changes in attitude, perceived behavioral control, entrepreneurial intent and intent to innovate (H2e-h). Furthermore, we tested the direct effect of university type -private versus public on changes in attitude and perceived behavioral control (H3a & b); as well as on entrepreneurial and innovative intentions (H3c & d). Although not directly hypothesized, the model implicitly suggests that attitude and perceived behavioral control act as mediators. Accordingly, the indirect effects of university type, out-of-class experiences and engaged faculty on entrepreneurial intention and

8 Refer to Appendix A.4 for the results of the alternative approaches that were attempted and a comparison of the slight differences in their outcome.

intention to innovate were tested. Gender, age, and entrepreneurial kin were controlled.

5.6 RESULTS

Results from paired sample t-test in Table 5.13 show that whereas compulsory course in entrepreneurship did not support a significant change in any impact indicator in public university, there was an increase in attitude ($p < .05$), perceived behavioral control ($p < .05$) and entrepreneurial intention[9] ($p < .05$) after completing a compulsory course in entrepreneurship in private universities. There was no significant change in intention to innovate in private universities.

Results from independent sample t-test in Table 5.14 indicate that at T1 there was a significant difference in the mean entrepreneurial intention ($p < .05$), attitude ($p < .01$), perceived behavioral control ($p < .001$), and intent to innovate ($p < .05$) between private and public universities. In other words, public university students had higher scores going into the compulsory entrepreneurship course. However, at T2, none of the t-tests were significant, which indicates that groups were equivalent at the end of the course. A t-test of the change over time across the two groups shows that students in public university had statistically significant lower change in entrepreneurial intention ($p< .05$), attitude ($p<.01$) and perceived behavioral control ($p<.01$) at the end of the compulsory course in entrepreneurship compared to their counterparts in private university. In other words, the change in attitude, perceived behavioral control and entrepreneurial intention is greater in private universities than in public university. However, there was no significant difference in the change in intention to innovate between public and private university students.

9 p is actually .045.

	Study Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Entrepreneurial Intention (T2)	5.55	1.50	**.94**														
2	Intent to Innovate (T2)	3.68	0.66	.65**	**.84**													
3	Attitude Towards the Act (T2)	5.93	1.32	.66**	.58**	**.92**												
4	Perceived Behavioral Control (T2)	4.52	1.00	.66**	.67**	.78**	**.88**											
5	Out-of-class-experience (T2)	3.86	0.73	.15**	.35**	.32**	.33**	**.88**										
6	Engaged-faculty (T2)	3.34	0.75	.19**	.26**	.28**	.40**	.43**	**.88**									
7	Entrepreneurial Intention (T1)	5.87	1.26	-.06	-.04	-.03	-.03	.00	-.05	**.90**								
8	Intent to Innovate (T1)	3.81	0.53	.00	.01	.02	.04	.03	.05	.56**	**.74**							
9	Attitude Towards the Act (T1)	6.24	1.14	-.04	.02	-.02	.00	.03	.02	.69**	.57**	**.89**						
10	Perceived Behavioral Control (T1)	4.71	0.90	.00	.02	.07	.06	.10	.02	.65**	.65**	.76**	**.84**					
11	Out-of-class-experience (T2)	4.04	0.63	-.05	.04	.00	.05	.03	.07	.25**	.45**	.40**	.35**	**.84**				
12	Engaged-faculty (T1)	3.47	0.69	-.07	-.04	-.03	-.06	.02	.03	.20**	.27**	.23**	.30**	.36**	**.84**			
13	Age	3.75	2.02	.06	.126*	.08	.13*	.10	.05	-.05	.09	.10	.15**	.08	.04			
14	Gender	0.52	0.50	.15**	.04	.04	.02	-.06	.09	-.04	-.02	-.04	-.03	-.01	.07	-.11*		
15	Entrepreneurial Kin	0.67	0.47	.02	.01	.00	.06	-.05	.15**	-.04	.04	.02	.00	.14**	.06	-.07	-.04	
16	University-type	0.39	0.49	.07	-.05	.06	.02	-.13*	.07	-.12*	-.12*	-.16**	-.20**	-.06	-.10	-.49**	.08	.22**

Diagonal values are Cronbach Alpha ($\propto$)
T1 = First measurement wave; T2 = Second measurement wave; N = 361; **p < .01; *p < .05 ;
Age: 1 = <18, 2=18, 3=19, 4=20, 5=21, 6 = 22-25, 7 = 26-30, 8 = >30
Gender: 0 = Male, 1 = Female
Entrepreneurial Kin: 0=No, 1=Yes
University-type: 0=Public, 1=Private

Table 5.15: Intercorrelations and Descriptive Statistics of Study Variables

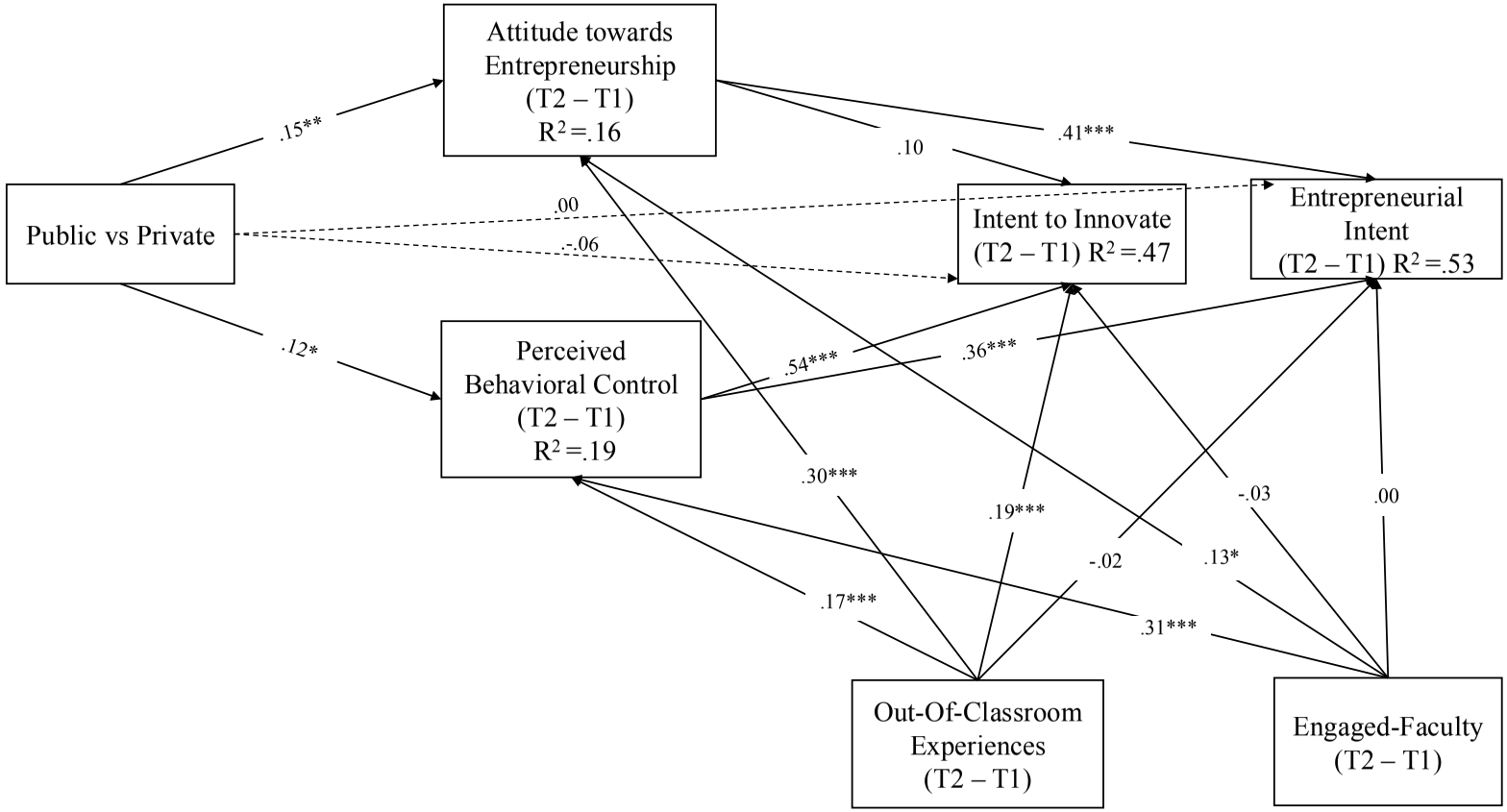
	Hypotheses	Unstandardardized Path Coefficients for Structural Model, *B*	Standardized Path Coefficients for Structural Model **β**		*p*
H1a	The change in ATA is positively related to change in Int2Inv	.05	.10	ns	Not Suported
H1b	The change in ATA is positively related to a change in EI	.47	.41	***	
H1c	The change in PBC is positively related to the change in Int2Inv	.35	.54	***	
H1d	The change in PBC is positively related to the change in EI	.56	.36	***	
H2a	Out of Class experiences have positive effect on the change in ATA	.56	.30	***	
H2b	Out of Class experiences have positive effect on the change in PBC	.23	.17	***	
H2c	Out of Class experiences have positive effect on the change in Int2Inv	.17	.19	***	
H2d	Out of Class experiences have positive effect on the change in EI	-.05	-.02	ns	Not Supported
H2e	Engaged Faculty Influences have positive effect on the change in ATA	.23	.13	*	
H2f	Engaged Faculty Influences have positive effect on the change in PBC	.40	.31	***	
H2g	Engaged Faculty Influences have positive effect on the change in Int2Inv	-.03	-.03	ns	Not Supported
H2h	Engaged Faculty Influences have positive effect on the change in EI	.01	.00	ns	Not Supported
H3a	Students in Private Universities will have greater increase in ATA after compulsory entrepreneurship education than students in Public universities.	.54	.15	**	
H3b	Students in Private Universities will have greater increase in PBC after compulsory entrepreneurship education than students in Public universities.	.32	.12	*	
H3c	Students in Private Universities will have greater increase in Int2Inv after compulsory entrepreneurship education than students in Public universities.	-.10	-.06	ns	Not Supported
H3d	Students in Private Universities will have greater increase EI after compulsory entrepreneurship education than students in Public universities.	.00	.00	ns	Not Supported
Controls	Age	-.01	-.02	ns	
	Gender	.36	.09	**	
	Entrepreneurial Kin	.08	.03	ns	

R Squared: EI (Entrepreneurial Intention) = .53; Int2Inv (Intention to Innovate) = .47; ATA (Attitude towards the act of entrepreneurship) =.16; PBC (Perceived Behavioral Control) = .19
* = p <.05; ** = p<.01; ***=p<.001; ns = Not Significant

Table 5.16: Summary of Hypotheses

The results of the structural equation modeling are presented in Figure 5.5 and Table 5.16. The result of the structural model showed a good fit: $X^2(9) = 13.44$; RMSEA = .04; CFI = 1.00; SRMR = .03. Figure 5.5 shows the standardized path coefficients for the relationship in the structural model. Table 5.16 reports the standardized path coefficients that are used to evaluate support for the hypotheses according to the theoretical model. Figure 5.5 indicates that not all the predicted paths were significant.

The evidence shows significant effects that support H1b-d. Specifically, it was found that change in attitude positively affects change in entrepreneurial intention (β = .41, p < .001); change in behavioral control had a positive effect on change in entrepreneurial intention (β = .36, p < .001); change in behavioral control also had a positive effect on change in intent to innovate (β = .54. p < .001). No significant effect for the relationship between change in attitude and change in intent to innovate was found (β = .01, ns). Hence H1a was not supported. With regards to the effect of the change in out-of-class experience, significant and positive effects on change in attitude (β = .30, p < .001); change in behavioral control (β = .17, p < .001); change in intention to innovate (β = .19, p < .001) were found. There was no significant relationship between changes in out-of-classroom experiences and entrepreneurial intention (β = -.02, ns). Therefore H2a-c were supported but H2d was not supported. Change in perception of engaged-faculty significantly and positively affected the change in attitude (β = .13, p < .05) and change in behavioral control (β = .31, p < .001). Surprisingly, there was no direct effect of engage-faculty on change of entrepreneurial intention (β = .00, ns) and change in intent to innovate (β = -.03, ns). Thus H2e & f were supported while H2g & h were not supported. There was found evidence that students in private universities had a greater increase in attitude (β = .15, p < .01) as well as behavioral



Model Fit: X 2 (9) = 13.44; RMSEA = .04; SRMR = .03; CFI = 1.00; * p < .05; ** p< .01; *** p< .001. Control Variables: age, gender and entrepreneurial kin

Figure 5.5: Specified Model with Standardized Path Coefficients

control (β = .12, p < .05) than their comparable counterparts in public university after undertaking compulsory entrepreneurship education. However, there was no conclusive evidence that students in private universities will develop higher entrepreneurial intention (β = .00, ns) and intent to innovate (β = -.06, ns) than those in public university. Thus, the results show support for that H3a & b but not for H3c & d. To clarify, this result does not contradict the result of the t-test in Table 5.14, rather, it strengthens it. Whereas the t-test groups variability into the error term, the structural model controls for other sources of variability in the explained variables (attitude, behavioral control, entrepreneurial intention and intention to innovate).

A post hoc statistical power analysis shows that the power to detect a significant effect is 1.00 for all the paths in the structural model. Therefore if there is a significant effect, there is a 100% chance that the structural model would have detected it.

Although H3c & d was not supported the indirect effect of private versus public variable on the change in entrepreneurial intention and intent to innovate were calculated. There is evidence of an indirect effect of university type (private versus public) on change in entrepreneurial intention (β = .18, p < .05) and change in intent to innovate (β = .11, p < .05) through the change in behavioral control. Also, an indirect effect of university type (private versus public) on change in entrepreneurial intention (β = .26, p< .01) through the change in attitude was found. However, attitude does not mediate the relationship between university type and intention to innovate β = .03, ns). Rather than a direct effect, the results show that engaged faculty have indirect effect on intention to innovate (β = .14, p <.01) and entrepreneurial intention (β = .23, p < .01) behavioral control. Out-of-class experiences also have indirect effect on entrepreneurial intention through attitude

(β = .26, p < .01). See table 5.17 for a complete list of the indirect effects.

5.7 DISCUSSION

This study was motivated by three distinct yet related research gaps: a) the effects the contextual factors such as compulsory courses in entrepreneurship (for example the change in policy on Education in Nigeria), that may help to explain contradictory reports of the impact of EE; b) the paucity of empirical studies on the role of experiential pedagogy in training innovative entrepreneurs; c) the need for novel impact indicators to extend the fast-growing conversation on innovative entrepreneurship. In line with this rationale, our objective in this study was to address three research questions: 1) Does compulsory entrepreneurship education affect students' intent to innovate? 2) Can experiential pedagogy influence intent to innovate? 3) Does the impact of compulsory entrepreneurship education vary across private versus public universities? To address the questions, a general model was developed to investigate the changes in intention to innovate and entrepreneurial intention across private and public universities and the direct effects of experiential pedagogy (out-of-classroom experiences and engaged faculty). The model was founded on the widely accepted theory of planned behavior. We explicitly postulated that university type (private versus public) will have an effect on the outcomes of compulsory entrepreneurship education while implicitly postulated that changes in attitude and behavioral control will mediate such effects.

The results of this study present mixed evidence of the impact of compulsory course in entrepreneurship with significant ramifications. In private universities, compulsory entrepreneurship course raises the attitude towards entrepreneurship and perceived behavioral control

Mediating/Indirect Effect	β Coefficient	
PBC mediates the Public vs Private - Intention to Innovate relationship	.11	*
PBC mediates the Public vs Private - Entrepreneurial Intention relationship	.18	*
PBC mediates the engaged faculty - intention to innovate relationship	.14	**
PBC mediates the engaged faculty - entrepreneurial intention relationship	.23	**
PBC mediates the out-of-class experieces - entrepreneurial intention relationship	.13	**
PBC mediates the out-of-class experiences - intention to innovate relationship	.08	**
ATA mediates the Public vs Private - Intention to Innovate relationship	.03	ns
ATA mediates the Public vs Private - Entrepreneurial Intention relationship	.23	**
ATA mediates the engaged faculty - intention to innovate relationship	.01	ns
ATA mediates the engaged faculty - entrepreneurial intention relationship	.11	*
ATA mediates the out-of-class experieces - entrepreneurial intention relationship	.26	**
ATA mediates the out-of-class experiences - intention to innovate relationship	.03	ns

* = p<.05; ** = p < .01; *** =p<0.001

ATA = Attitude Towards the Act of Entrepreneurship

PBC = Perceived Behavioral Control

Table 5.17: Summary of Indirect Effects

of students, while in public universities these effects are absent. In fact, although students in private universities begin with attitudes and behavioral control that are significantly lower than their counterparts at public universities, the differences vanish after undertaking the compulsory entrepreneurship course. The results suggest that students in private universities experience a greater increase in attitude and behavioral control than their counterparts in public university over the duration of the compulsory entrepreneurship course.

One can conclude, as Canever, Barral, and Ribeiro (2017) and Perim (2015) conclude with regards to entrepreneurial intention, that the public university dampens attitude towards entrepreneurship and behavioral control while private university strengthens them. But such conclusion disregards the role of other factors in entrepreneurship education. One such factor that is more likely than not, *Ceteris paribus,* to explain why students in private universities have greater attitude and behavioral control than their counterparts in public universities is experiential pedagogy. The structural model shows that experiential pedagogy (which is constructed in our study as out-of-class-experiences and engaged-faculty) indirectly raises entrepreneurial intention of all students. Both out-of-class-experiences and engaged-faculty were used more in private universities than in public universities. As Nabi et al. (2017) conclude, experientially based teaching methods have stronger impact regarding entrepreneurial intention. In other words, "more experiential pedagogies seem to have the most potential to have an impact at higher levels because students focus on developing behavioral competency in solving problems in real-life entrepreneurial situations" (Nabi et al. 2017, p. 292).

Furthermore, the evidence shows that regardless of the type of university, out-of-class-experiences is a significant positive factor in the development of intent to innovate. However, contrary to the hypothe-

sis, students in private universities do not develop higher intention to innovate than those in public universities after completing compulsory entrepreneurship education.

Last, the evidence suggests that perceived behavioral control is a mediator of the effects of experiential pedagogy on intention to innovate and entrepreneurial intention.

These results have several theoretical and practical implications discussed below.

5.7.1 *Theoretical Contributions*

First, the study extends entrepreneurship education theory by highlighting the effects of context and pedagogy on innovative intentions (see Arranz et al. 2017; Gielnik et al. 2015; Mayhew et al. 2012; Neck and Greene 2011; Rasmussen and Sørheim 2006; Baumol 2004; Baumol, Schilling, and Wolff 2009; Souitaris, Zerbinati, and Al-Laham 2007). Scholars agree that experiential pedagogy promote higher entrepreneurial outcomes (Gielnik et al. 2015; Neck, Greene, and Brush 2014; Mayhew et al. 2012; Rasmussen and Sørheim 2006; Nabi et al. 2018; Neck and Greene 2011; Mitchell and Chesteen 1995; Honig 2004; Souitaris, Zerbinati, and Al-Laham 2007) including innovative behavior (Arranz et al. 2017; Mayhew et al. 2012; Neck and Greene 2011; Rasmussen and Sørheim 2006; Baumol 2004; Baumol, Schilling, and Wolff 2009). However, the antecedents of innovative behavior are not clear. We adopted Mayhew et al. (2012) scale to assess the intention to innovate because intention is the most appropriate antecedent of behavior. To our knowledge, we present the first study to investigate the intent to innovate as an innovative outcome of compulsory entrepreneurship education using the theory of planned behavior. The results provide evidence of the decisive role of experiential pedagogy

in the development of innovative intentions which is a precursor to innovative entrepreneurship. Similar to the results of Arranz et al. (2017) we find that out of class experiences increase attitude and behavioral control regarding entrepreneurship. Also, similarly to Arranz et al. (2017), we did not find a direct impact of out of class experiences on a general entrepreneurial intention. However, the findings extend their research by providing evidence that out of class experiences stimulates intent to innovate.

Second, it contributes to the theory of planned behavior by demonstrating that the theory can also explain the intention to innovate in a developing economy. In line with similar studies (Rauch and Hulsink 2015; Fayolle and Gailly 2015), the findings of this study, from a developing economy context, show that changes in attitude and behavioral control are mediators of the effect of compulsory entrepreneurship education on changes in entrepreneurial intention. Our results show that behavioral control is a mediator of the relationship between entrepreneurship education and intent to innovate.

Third, the study contributes to the fast-growing field of innovative entrepreneurship. Advocates of innovative entrepreneurship argue that innovative entrepreneurs can create disruptions that sustain economic growth (Baumol, Schilling, and Wolff 2009). However, the mechanisms that can help to predict innovative entrepreneurship are poorly understood. By demonstrating that perceived behavioral control is an important mechanism for innovative intentions which is a predictor of innovative entrepreneurship, this study contributes to the knowledge of the mechanism of innovative entrepreneurship.

Fourth, this study also adds to experiential learning theory. The ethos of experiential learning is that *learning by doing* is the best way to learn (Kolb 1984; Kolb, Boyatzis, and Mainemelis 2001; Dewey and Small 1897). Scholars have emphasized that learning should be active,

practical as well as theoretical not just passive and theoretical (Gielnik et al. 2015; Rauch and Hulsink 2015; Neck, Greene, and Brush 2014; Neck and Greene 2011; Rasmussen and Sørheim 2006). Based on experiential learning theory, active and practical learning methods such as out of class experiences provide opportunities to transform experiences into knowledge. From Kolb (1984) standpoint, such learning occurs by applying theories (action) and reflecting on the experiences from various perspectives (reflection). In this way, Arranz et al. (2017) suggest that experiential pedagogy will promote innovative outcomes. Such practices inspire students' intent to innovate (Mayhew et al. 2012). In line with these submissions, this study provides evidence to show that out-of-class experience, an element of experiential pedagogy, is directly related to the development of intent to innovate.

Fifth, similar to Canever, Barral, and Ribeiro (2017), the study did not find evidence that students in private universities will develop more or less entrepreneurial intention or intention to innovate than those in public universities. This finding is encouraging, in that it suggests that the differences in socioeconomic backgrounds of students, staff-to-student ratio and other resources constraints at public and private universities may have no bearing with entrepreneurial intention or intent to innovate. This assertion is supported by evidence from Coleman, Hoffer, and Kilgore (1982) which shows that after controlling for socioeconomic background differences in cognitive outcomes between public and private universities nearly vanishes. Instead, our evidence suggests that what matters for nurturing entrepreneurial intention or intention to innovate may be the application of experiential pedagogy in a compulsory course in entrepreneurship education.

Furthermore, in line with Souitaris, Zerbinati, and Al-Laham (2007) the results of this study confirm that engaging-faculty inspires students to change their attitude towards entrepreneurship as well as

improve their behavioral control. In other words, engaging-faculty indirectly inspires intent to innovate and entrepreneurial intention. By this, our study echoes the remarks of Arranz et al. (2017) that entrepreneurship educators should be, to some extent, entrepreneurs. Such educators draw from real-life experiences when teaching. Students perceive this teaching method highly inspiring because it breaks down the boundaries between the university and the outside world. If one assumes that faculty plays a master-leader role in a student group, then some cues can be drawn from the well-established master-apprentice pedagogy model (Hinton 2001; Sveiby 2001) to illustrate the significance of practicing entrepreneurs in the classroom. In the master-apprentice pedagogy model, the apprentice acquires tacit knowledge by observation and interaction. The knowledge acquired changes their perception of the ease or difficulty of a particular behavior over time. In other words, the master influences the behavioral control of the apprentice. To the same extent, faculty who are practicing entrepreneurs influence the behavioral control of students.

Finally, by providing evidence of the direct effect of out-of-classroom-experience on intention to innovate, and the indirect effect of engaging-faculty on intention to innovate, this study provides evidence of how to train innovative entrepreneurs (Baumol 2004; Baumol, Schilling, and Wolff 2009; Rasmussen and Sørheim 2006). As Block, Fisch, and Van Praag (2017) and Baumol, Schilling, and Wolff (2009) note innovative entrepreneurs — those who focus on the introduction and acceptance of new products and new production methods — require a change in strategy of curriculum and pedagogy from other types of entrepreneurs. Understanding how these entrepreneurs are taught is a vital step in the knowledge of how higher education cultivates innovative entrepreneurship.

5.7.2 *Practical Implication*

Since Birch's (1979) finding that small firms are generators of jobs and growth in the United States, entrepreneurship has become fashionable globally. Promoting graduate and youth entrepreneurship is a key issue on many policy agendas in both developing and developed economies. An example is the policy of compulsory courses on entrepreneurship across all universities -private and public in Nigeria which is the empirical context of this study. The logic behind this belief in the value of entrepreneurship education is that entrepreneurial intention that is stimulated through entrepreneurship education will help in raising entrepreneurial activities and consequently lead to the creation of employment. But is this policy having an equal effect across public and private universities? Perhaps of more interest to policymakers: are private universities creating more innovative entrepreneurs? Our study addresses this important public policy question by evaluating the effect of compulsory entrepreneurship education across public and private universities.

The study found strong evidence that regardless of contextual factors, the higher the use of out-of-class activities the higher innovative intentions. Therefore, to cultivate innovative entrepreneurs, educators should pay more significant attention to opportunities that will take learning beyond the classroom. For instance, entrepreneurship courses can include field trips, student start-up projects, business planning competitions, computer simulations, cooperative group work, collaborative learning outside classrooms. Other low-cost out-of-class activities that can be implemented with large student populations include online chat forums, the use of video and films, and student entrepreneurship clubs (Solomon 2007). These practices stimulate innovative ideas and maximize the development of innovative intentions (Arranz et al. 2017) which, in turn, are the precursor to innovative

entrepreneurship both at the firm, regional and national levels. Innovative entrepreneurs will introduce new products, services, and processes that will ensure high economic growth (Baumol 2004).

It is noteworthy that compulsory courses in entrepreneurship education may conflict with the requirements of main courses which may discourage some students from actively participating in the course. We recommend that students should be incentivized to participate in this course by introducing opportunities for practicing and applying their knowledge through various entrepreneurship competition. We note that the implementation of experiential pedagogy is resource-intensive (Rasmussen and Sørheim 2006), so to cultivate innovative entrepreneurship, policymakers may invest in promoting out-of-class-experiences and training faculty to engage students in the classroom more.

5.8 LIMITATIONS AND RECOMMENDATIONS

Like all studies, this one has certain limitations that further research should overcome. First, due to the compulsory nature of the entrepreneurship course, it was impracticable to find an equivalent control group within a university or around the country (Souitaris, Zerbinati, and Al-Laham 2007) without introducing more biases than validity (Fayolle and Gailly 2015). Although the policy of compulsory course in entrepreneurship creates a natural experiment, pretest-posttest design with a randomized control group is still considered the *sin qua non* of evaluation studies (Martin, McNally, and Kay 2013). It can be argued that since the study measured the changes in the variables over time and across two types of universities, the design allowed us to make conclusions regarding the effect of university type. However, future research should improve this methodological

limitation by including a control group by identifying a comparable university in a comparable country where there is no compulsory course in entrepreneurship education. For instance, such research may identify a comparable university in a comparable country where there is no compulsory course in entrepreneurship education as a control group. Second, because this study was over 5 months period it is plausible that the short length of the course explains the lack of direct effect of changes in attitude on changes in intent to innovate (Fayolle and Gailly 2015). Besides, since the data used was collected one month after the end of the course, the long-term effects of the attitudes, behavioral control and intentions were not investigated (Arranz et al. 2017). Another limitation of this study relates to the practicalities of doing research in developing countries. The public university used for this study was interrupted by labor strike action for a period of almost 3 months. Upon resumption, the remaining classes were either skipped or rushed. The period of break might have affected the development of entrepreneurial intention of some students in public universities because it provides extra time for intention to incubate (Krueger and Carsrud 1993). The break in training may provide the opportunity for students to test their aptitude for an entrepreneurial career choice; through the rest of the program, students may discover that they have no aptitude for an entrepreneurial career. It is also plausible that the limited time after resumption was insufficient for the development of entrepreneurial intention.

Finally, our study focuses on intention to innovate which may translate to innovative entrepreneurship (Greene and Saridakis 2008). However, people with innovative intent may not pursue innovative entrepreneurship any more than will people with entrepreneurial intent become entrepreneurs. After all, entrepreneurs are constrained by the entrepreneurship degree of freedom (Wilson and Martin 2015). Fu-

ture studies should employ longitudinal design over a longer period to investigate whether innovative intentions translate to innovative entrepreneurship.

5.9 CONCLUSION

This study shows, in the Nigerian context, that out-of-class experiences transcend the contextual factors such as the type of course and type of university to increase the intentions to innovate of all students. Therefore if policymakers in similar regions want to increase the levels of intentions to innovate, they should promote out-of-class activities. Second, this study provides evidence that engaging-faculty increases the changes in attitude towards entrepreneurship and perceived behavioral control. Therefore entrepreneurship educators should engage students in the learning process for higher impact to occur. Last, this study did not find any evidence that compulsory courses in entrepreneurship education enhance the intentions of students in private universities more than those in public universities. Thereby contributing to the debate of the relative efficacy of pedagogy versus resources for impactful entrepreneurship education

6

TOWARDS A THEORY OF EXPERIENTIAL PEDAGOGY

Abstract

Articles 1 and 2 of this thesis, along with some similar studies indicate a significant utility of experiential pedagogy in terms of innovative entrepreneurship. But the logic of experiential pedagogy has been inadequately explained. We present a theoretical exploration experiential pedagogy. We position experiential pedagogy as a function of engaged-faculty and out-of-class experiences constructs. Grounded on the experiential learning theory, we present a parsimonious typology of the forms of experiential pedagogy used in entrepreneurship education. The robustness of this typology is assessed using criteria that have been proposed for evaluating classificational schemata.

6.1 INTRODUCTION

> To *learn* entrepreneurship, one must *do* entrepreneurship (Neck, Greene, and Brush 2014).

Experiential pedagogy - teaching and learning methods consistent with experiential learning theory- have long been recognized as a potentially viable means of promoting and sustaining learning outcomes of entrepreneurship education such as entrepreneurial intention and behavior (Nabi et al. 2017). Some scholars even argue that experiential pedagogy is appropriate for training innovative entrepreneurs, suggesting a link between experiential pedagogy and innovation (Baumol, Schilling, and Wolff 2009; McMullan and Boberg 1991; Neck, Greene,

and Brush 2014; Neck and Greene 2011). However, only recently has little empirical evidence been provided which supports the speculation that experiential pedagogy is linked to innovation. Mayhew et al. (2012) provide one of such empirical evidence. Their study examined higher education students's experiences and found positive and significant relationship between students' perception of out-of-classroom learning experiences and intention for innovation. Perhaps Udeozor (2019) provides the best evidence of a strong relationship between experientially based teaching methods and innovation (See Article 1 of this thesis). In that study, Udeozor explores the experiential pedagogy used in an entrepreneurship course at a private university in Nigeria through the perspectives of five students focus groups. Three out of the five focus groups were undergoing the course while the other two had completed the course. The data from two of the focus groups who had completed the entrepreneurship course suggest a strong link between experientially based teaching methods and innovative behavior. Similarly, the results in Udeozor et al. (2019) provides even more generalizable evidence of the links between experiential pedagogy and innovation (See Article 2 of this thesis).

Assuming we accept as valid the espoused utility of experiential pedagogy regarding innovation, the reasons why it "works" still remains shaded in "mystery." In other words, the logic of experientially based teaching methods in entrepreneurship education has not been adequately explained. For example, the antecedents of innovative aspirations or intentions have not been explicitly and systematically linked to experientially based teaching methods. Udeozor (2019) and Udeozor et al. (2019) attempt to shed more light on this "mystery." Udeozor (2019) shows that experientially based teaching promotes a transformation of attitude and feasibility (also called perceived behavioral control or self-efficacy) of innovation which triggers innovative

aspirations, while Udeozor et al. (2019) show that perceived behavioral control is a mediator of the effects of experientially based teaching methods on intentions.

Moreover, what constitutes experiential pedagogy is not consistently or clearly defined in the literature regarding this subject. To address this gap, Béchard et al. (2005) identify three *"archetypical"* pedagogy in entrepreneurship education: the supply model, the demand model, and the competence model, plus two hybrid teaching models. However, the limitation of Béchard et al. (2005) archetypical models is that it does not provide a systematic way of assessing the degree of experiential pedagogy. We argue that until management scholars adequately unpack the logic of experiential pedagogy and offer solutions for consistently and clearly defining it, prescriptions of experientially based teaching methods will necessarily remain superficial.

The "problem" is exacerbated by the proliferation of labels for experientially based teaching methods. Some of the labels include action-based (Gielnik et al. 2015), whole-person learning (Barbera et al. 2015), technology-mediated learning (Alavi and Gallupe 2003). As a result, it is not clear whether management theorists talk about fundamentally the same phenomena. With the ambiguity surrounding the labels, it is not surprising that a general theory of experiential pedagogy has not emerged.

Thus, we raise the questions: How is experiential pedagogy constructed? How can pedagogy be categorized?

This paper seeks to contribute to the theory of experiential pedagogy in two ways. First, we deconstruct the experiential pedagogy phenomena to advance the understanding of how it "works." In particular, it will be argued that experiential pedagogy comprises of two constructs: engaged-faculty — instructors who create dynamic and challenging learning environments within the classroom; and out-of-classroom

experiences — co-curricular and extra-curricular activities that take place outside of the classroom. Second, this paper will propose a parsimonious pedagogy typology for a more consistent delineation of various teaching methods. Broadly, all teaching methods, as will be argued fall on a spectrum from traditional to transformative pedagogy based on how consistent they are with experiential learning theory. Specifically, distinctions will be drawn between traditional, transitional and transformative pedagogy. The robustness of the scale is tested using a set of questions that have been proposed for evaluating classificational schemata. The implication of this scale for theory and practice will then be discussed.

6.2 CONCEPTUALIZING EXPERIENTIAL PEDAGOGY

Experiential pedagogy can be attached to multiple and sometimes distinct pedagogical phenomena. Three of the most common phenomena that are often viewed as examples of experiential pedagogy include occasions where 1) instructors create dynamic and challenging learning environments that engage students within the classroom 2) students engage in peer learning 3) students engage in external learning experiences. These phenomena are not mutually exclusive constructs but can co-exist as unique dimensions of experiential pedagogy.

The first phenomenon, where instructors create challenging learning environments within classrooms, typically involves classroom learning activities such as idea generation, problem-based learning (Kolb 2014), cases (Gartner and Vesper 1994), class discussion (Katz 1995), challenging assessments (Mayhew et al. 2012) and the use of practitioners in the classroom (Neck, Greene, and Brush 2014; Souitaris, Zerbinati, and Al-Laham 2007). The second phenomenon, students engaging in peer learning, is perhaps better known as collaborative learning or

peer learning (Gokhale 1995). Both the first and second phenomenon are in-class learning experiences that require an instructor to facilitate. The more engaging the instructor is, the more actively involved the students are likely to be. As identified in Chapter 4, besides the role of an instructor, a practice-oriented curriculum is essential for experiential pedagogy because it provides the framework for in-class learning experiences. Nonetheless, an instructor is required to action any curricular activity. Therefore, we group all in-class learning experience including collaborative practices and practice-oriented curriculum under the label "engaged-faculty" construct.

The third phenomenon, external experiences, has been described as "out-of-class" learning experiences that give students opportunities to gain direct sense experiences of the entrepreneurship realities being studied (Mayhew et al. 2012). In other words, out-of-class experiences provide students with opportunities for experimentation or observation. Examples of out-of-class experiences include field trips (Klatt 1988), internships (Dilts and Fowler 1999), and business startup (Truell, Webster, and Davidson 1998).

Our position in this paper is that engaged-faculty and out-of-class experiences and two constructs of experiential pedagogy. The common denominator of both constructs described above is a philosophy of experience as a source of learning. Such a philosophy is consistent with the experiential learning theory which is, arguably, the most robust theory of experience.

6.3 ONTOLOGICAL DIMENSIONS OF LEARNING AND PEDAGOGY

> Adults are generally not empty vessels seeking to be filled or clay in need of shaping. Instead, they are individuals with experiences, knowledge ... that influence how they learn and their attitude towards entrepreneurship (Lowy and Hood 2011, p., 267).

The two onto-epistemological positions that underpin learning are behaviorism and constructivism. Behaviorism assumes learning is primarily the passive transfer of knowledge or fixed ideas from the teacher to the student (Skinner 2011; Skinner et al. 1972). According to Skinner (2011), learning is a change in observable behavior that is caused by external stimuli such as acquisition, reinforcement, and application in the environment. Behaviorism focuses on the importance of the consequences of performances and contends that the consequences of behavior determine whether the behavior will occur again. In short, behaviorism involves the transmission of fixed ideas to learners. Examples of pedagogy influenced by behaviorism include lectures, reading, watching/listening, homework, quizzes and so forth (Béchard et al. 2005).

Contrary to behaviorism which involves the transmission of fixed ideas to learners, constructivism assumes that learning involves actively participating in the construction of new understanding. Learning occurs through observation, processing, and interpretation by activating prior knowledge and personal experiences. Whereas behaviorism focuses on knowledge-acquisition, constructivism focuses on knowledge-construction. Pedagogy influenced by constructivism views teaching as a "strategic intervention to allow for—and influence—how students organize the resources at their disposal (e.g., knowledge, abilities) into competencies that can be mobilized for action" (Béchard et al. 2005, p., 115-116). Examples include seminars, presentations, debates, essays, modeling, and portfolios.

Pedagogy often used in entrepreneurship education is "highly behaviorist: lectures, homework, quizzes, and so forth, that focus on knowledge-acquisition, rather than the deeply experiential approaches of the constructivist perspective" that focus on knowledge-construction (Nabi et al. 2017, p., 280).

Experiential Learning Theory (ELT), draws on constructivism and proposes that learning takes place through the process of creation and recreation of social knowledge in the learner (Kolb 1984; Kolb and Kolb 2005). ELT provides a holistic model of the learning process that has its intellectual origins in the seminal works of John Dewey (1897) (on philosophical pragmatism); Kurk Lewin (1951) (on social psychology); and Jean Piaget (1976) (on cognitive-developmental genetic epistemology). As Dewey and Small (1897) state, learning is a "continuing reconstruction of experience" and active pedagogy precedes passive ones in the development of an individual (Dewey and Small 1897, p.79). The next section discusses the ELT and its implications on pedagogy (see Figure 6.1).

6.4 EXPERIENTIAL LEARNING THEORY AND EXPERIENTIAL PEDAGOGY

As noted earlier, the fundamental argument of ELT is that experience plays a central role in learning and development. The six propositions that underpin the theory are (1) Learning is best conceived as a *process*, not in terms of outcomes; (2) All learning is relearning; (3) Learning is a holistic process of adaptation to the world; (4) Learning is the process of *creating* knowledge not *transmitting* knowledge. (5) Learning results from synergetic transactions between the person and the environment; (6) The process of learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world.

The first proposition, where learning is conceived as a *process, focuses* on engaging students in processes that best enhance their learning. Such processes according to Kolb and Kolb (2005) should include "feedback on the effectiveness of their learning efforts" (p. 194). The second proposition, learning is relearning, suggest that students have prior well-articulated ideas and firmly held belief about a topic. Stu-

dents with entrepreneurial kin or from a family business background, for example, approach entrepreneurship education with a preconceived notion of entrepreneurship. For such students, ELT suggests that learning is best facilitated by a process that draws out students' beliefs and ideas about a topic so that they can be examined, tested, and integrated with new, more refined ideas (See for example Barbera et al. 2015).

The third proposition, learning is a holistic process of adaptation to the world, suggests that learning occurs within and outside the classroom and therefore involves the integrated functioning of the total person - thinking, feeling, reflecting or perceiving, and acting or behaving. Similarly, the fourth proposition posits learning as a process of *creating and re-creating* knowledge within the learner through experience within and outside the classroom rather than transmitting fixed ideas to a learner that takes place within the classroom. The fifth proposition posits learning as a product of synergetic transactions between an individual's existing concepts and the new experiences from the environment. Put differently, the fifth proposition suggests that learning comes from resolving the tension between existing concepts and new experiences.

Likewise, the sixth proposition states that learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world. That is, learning results from back and forth movement between two dialectically related modes of grasping experience - Concrete Experience[1] (CE) and Abstract Conceptualization[2] (AC) - and two dialectically related modes of transforming experience - Reflec-

1 Concrete Experience relates to acquiring information through tangible, felt qualities of the world by relying on senses.

2 Abstract conceptualization involves gaining knowledge or skills from experience by thinking about, analyzing, or by systematic planning

tive Observation[3] (RO) and Active Experimentation[4] (AE). Concrete experiences are the basis for observations and reflections which are assimilated and distilled into abstract concepts. These abstract concepts form the canvas on which new implications for action can be drawn. These implications can be actively tested and serve as guides in creating new experiences. This proposition is arguably the most profound.

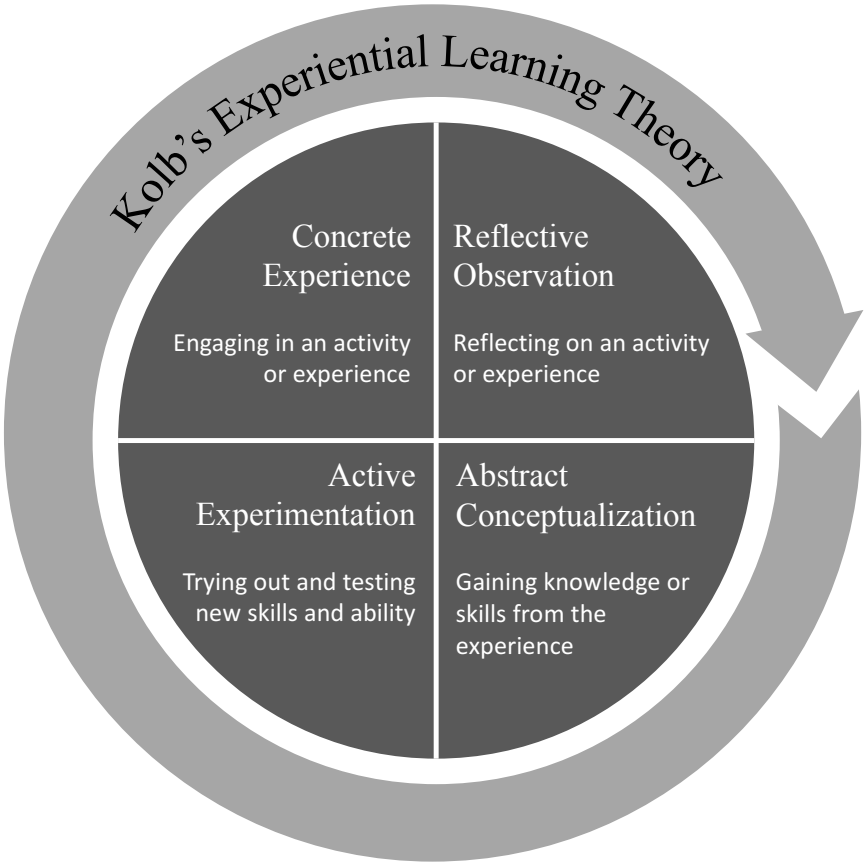
Based on the six propositions, experiential learning can be summed up as "the process whereby knowledge is created through the transformation of experience" (Kolb 1984, p.41). Viewed in this way, experiential learning is a recursive process that requires the learner to touch all the learning bases - experiencing, reflecting, thinking, and acting. In short, experiential learning is a process of constructing knowledge that involves creative tension among the four learning modes (experiencing, reflecting, thinking, and acting) that is responsive to contextual demands (Kolb and Kolb 2005).

Critiques of ELT focus on the theory's underlying assumptions. Some scholars argue that the theory is individualistic, cognitivist, and technological (Holman, Pavlica, and Thorpe 1996); while others, Kayes (2002) for example, critique the critics by suggesting that they overlook the role of Vygotsky's social-constructivist learning theory in the experiential learning theory and the role of personal knowledge and social knowledge in experiential learning. Kayes proposes an extension of the theory based on Lacan's poststructuralist analysis to include the role that language play in shaping experience. Critiquing the central role of experience, Buchmann and Schwille (1983) argue that reading is in some ways superior to reflection on personal experience because it broadens possibilities and perspectives. Similarly, Brehmer (1980)

3 Reflective Observation involves internally examining and exploring one's own experiences with the objective of seeking clarification and meaning which results in a changed conceptual perspective.

4 Active Experimentation involves taking action to try out and test new skills and abilities

Figure 6.1: Experiential learning Theory Kolb (1984)



contends that experience does not necessarily lead to better judgment and decisions. Nonetheless, Hickcox (2002) report that 61.7% of studies that applied the ELT model find strong support for ELT .

Within entrepreneurship education, experiential learning has been explored through various theoretical lenses 'learning by doing' (Cope and Watts 2000); Learning from past business experience (Rerup 2005; Lamont 1972); Learning from positive and negative experiences (Minniti and Bygrave 2001); Learning from past experiences (Sardana and Scott-Kemmis 2010); and Learning for participation and from

the experiences of others – Vicarious learning (Lévesque, Minniti, and Shepherd 2009). Experiential learning also underpins the following teaching method labels: action-based (Gielnik et al. 2015; Rasmussen and Sørheim 2006), whole-person learning (Barbera et al. 2015), technology-mediated learning (Alavi and Gallupe 2003) and experiential education (Proudman 1992). Our position in this paper is that all teaching methods consistent with the experiential learning theory are best referred to as experiential pedagogy. To some extent, the ethos of experiential pedagogy is that one must do entrepreneurship to learn entrepreneurship (Neck, Greene, and Brush 2014).

As Kolb (2014) notes, "experiential learning" is a particular form of learning from life experience contrary to traditional lecture and classroom learning. In other words, with experiential learning, a learner is directly in touch with the realities being studied. Unlike in traditional lecture and classroom learning where the learner only reads about, hears about, talks about, or writes about these realities, experiential pedagogy emphasizes "direct-sense" experience and "in-context" action as the fundamental source of learning.

Besides "direct-sense" experience and "in-context" action, reflection is a critical source of learning. Through reflection, an individual internally examines and explores their experiences with the objective of seeking clarification and meaning. The process results in a changed conceptual perspective.

Certainly, it is easy to envision how other dimensions of experiential learning such as concrete experiences and abstract conceptualization might be integral to experiential pedagogy. Nonetheless, actions are the basis for new concrete experiences while reflections are the basis for abstract conceptualization. Action and reflection are critical for transforming experiences. In short, the label experiential pedagogy should not be applied to any pedagogical method that does not include

an opportunity for direct sense experience of entrepreneurship or reflection of experiences. Experience is at the core of experiential pedagogy.

Consistent with experiential learning theory, we define *experiential pedagogy* (as stated in chapter 4) as

> teaching practices that engage students within and beyond the classroom to learn by action and reflection in order to draw conclusions on alternative ways to act differently.

The three keywords in this definition are: *engage*, *action* and *reflection*. We argue that experiential pedagogy gives students the opportunity(ies) to *(a) engage* - proactively participate in the learning - facilitated by engaged faculty; (b) take some form of *action*(s) within and beyond the classroom - which constitutes concrete experience; (c) and *reflect* on their actions. Examples include the use of venture creation, business plan competition, field trips, consultation with practicing entrepreneurs or computer and behavioral simulations, group work, relationship with faculty and other co-curricular activities (Mayhew et al. 2012).

The importance of recognizing the centrality of experience element to the experiential pedagogy construct in entrepreneurship education can hardly be overstated. Experiential pedagogy is not just the old wine of pedagogical innovation in new bottles, as those who are cynical over the constant emergence of new academic fads might suggest. Rather, experiential pedagogy (in this context of entrepreneurship education) refers to a distinct, multidimensional, and empirically verifiable set of tools for entrepreneurship education. Importantly, the complete academic and practitioner legitimacy of entrepreneurship

education may only be realized when both experience and reflection are widely recognized as fundamental to learning entrepreneurship.

Drawing on the discussions on experiential learning theory and conceptualization of experiential pedagogy, the next section proposes a parsimonious framework for experiential pedagogy.

6.5 THE CASE FOR PEDAGOGY SCALE

> If we accept as valid the espoused utility of experiential pedagogy regarding innovation, the reasons why it "works" still remains shaded in "mystery."

Having conceptualized experiential pedagogy as a product of engaged-faculty and out-of-class learning experiences, and underpinned by six propositions of ELT, it is possible to conceptually derive at least two forms of experiential pedagogy applied in entrepreneurship education. These forms will be labeled *transformational* and *transitional* pedagogy. Certainly, one can envision a third form of pedagogical methods used in entrepreneurship education may not fall into these two categories *per se*. This paper, consistent with other articles, refer to this form as *traditional* pedagogy (see Section §6.5). It is important to highlight that all three forms of pedagogy can often concurrently exist in entrepreneurship education. However, they will be presented separately here to draw distinctions between experiential and non-experiential pedagogy and help demystify how experiential pedagogy works.

Also, it is important to emphasize that all three forms are defined by how consistent they are with ELT and our earlier definition of experiential pedagogy. On this basis, we propose a pedagogy scale that is underpinned by the following propositions:

1. Experiential pedagogy involves at least one mode of grasping experience (concrete experience -CE, or abstract conceptualization -AC) and one mode of transforming experience (active experimentation -AE, or reflective observation -RO). This proposition is in line with proposition 6 of the ELT stated earlier. According to ELT learning results from grasping and transforming experience. Implying that experiential pedagogy provides opportunity for both grasping and transforming experience. In grasping experience, experiential pedagogy allows students to gain new knowledge either through feeling or thinking, analyzing and systematical planning activities based on the realities being taught. Similarly, for transforming experience, students either observe and reflect on their experiences with the objective of seeking clarification and meaning or by active experimenting to test new skills and abilities (Kolb, Boyatzis, and Mainemelis 2001). In short, experiential pedagogy involves the opportunity for action and/or reflection, and opportunity for feeling and/or thinking.

2. Experiential pedagogy involves out-of-class learning experiences. This proposition is consistent with ELT 3, 4 and 5. Co-curricular and extra-curricular activities take learning outside a classroom environment giving students the opportunity to balance the dialectic tension between assimilating new experiences into existing concepts and accommodating existing concepts into new experiences. In other words, out-of-class experiences give students the opportunity to connect the dots from theory (existing concepts) to practice (new experiences). Out-of-class experiences provide opportunities to acquire further knowledge associated with becoming a confident businessperson (Mayhew et al. 2012). Out-of-class experiences provide opportunities for juxtaposing

the theoretical with the practical; the hypothetical with the pragmatic; the problem with the solution.

3. Experiential Pedagogy is supported by engaged-faculty. Consistent with ELT proposition 1 and 3, engaged-faculty in this context are instructors who actively engage students in the process that best enhance their learning. They create challenging and dynamic learning environments that involves the integrated functioning of the total person (thinking, feeling, reflecting, and acting), through their experiences, teaching styles, and attitudes. In entrepreneurship education, engaged-faculty may be practicing entrepreneurs who share their experiences or instructors who create environments for students to *engage* in learning by thinking, feeling, reflecting, and acting.

4. Experiential pedagogy is supported by practice-oriented curriculum. A practice-oriented curriculum integrates exercises for developing essential entrepreneurial skills such as self-confidence and self-esteem through individual and peer-learning exercises, and out-of-class activities. Practice-oriented curriculum provides "more free-wheeling exercise of the imagination in the unorthodox directions" (Baumol 2004, p., 25). Curricular components may include the following: creativity, negotiation, leadership, and new product development, (McMullan and Long 1987; Vesper and Gartner 1997); sources of capital and bootstrapping (Vesper and Gartner 1997; Zeithaml and Rice Jr 1987); challenges of various stages of venture development (McMullan and Long 1987; Plaschka and Welsch 1990); intellectual property rights; and ambiguity tolerance. Effective assessments, for instance, encourage problem-solving and evaluate students' abilities to construct and defend an argument (Mayhew et al. 2012). As Banta (1996)

note "effective assessment programs reflect the imaginative, creative, and energizing aspects of learning" (p.11).

In short, the more a pedagogy is consistent with experiential learning theory, the more it is considered *experiential pedagogy.* The lesser the pedagogy is consistent with experiential learning, the lesser it is considered experiential. This viewpoint is consistent with extant literature (See for example Mayhew et al. 2012; Rauch and Frese 2007; DeTienne and Chandler 2004; Souitaris, Zerbinati, and Al-Laham 2007). Also, the more opportunities for out-of-class experiences, engaging faculty and the use of practice-oriented curriculum, the more experiential the pedagogy.

6.6 THE PEDAGOGY TYPOLOGY

Figure 6.1 presents the three label pedagogy typology we propose: Transformational, Transitional and Traditional pedagogy. As shown in the figure, the typology is based on whether a teaching technique(s) involves in-class experiences facilitated by engaged faculty or whether they involve out-of-class experiences; and whether they involve grasping or transforming modes of ELT or both. According to the table, Traditional pedagogy involves in-class learning experiences that only involve the grasping mode of ELT. Transitional pedagogy involves in-class experiences supporting both grasping and transforming modes of ELT. Transformational pedagogy involves both in-class and out-of-class experiences and supports both grasping and transforming modes of learning. Figure 6.3 highlights some key attributes of the forms of pedagogy we propose. It is important to emphasize that the opportunity for experimentation and reflection increases from

traditional to transformational pedagogy. The next section discusses the three labels in more detail.

6.6.1 *Transformational Pedagogy*

The label transformational pedagogy is used here to refer to pedagogy that supports two modes of grasping (CE and AC)[5] and transforming (AE and RO)[6] experience, often in a recursive manner. Although transforming experience may be through reflection or experimentation, the later —experimentation is the focus of transformational pedagogy. Under this form of pedagogy, abstract entrepreneurship concepts are actively tested and the implications of the testing serve as guides in creating new concrete experiences for students. The new experiences become a basis for reflections. Thus, this form of pedagogy is highly experiential by virtue of the fact that it requires proactive participation in the learning through some form of experimentation which constitutes concrete experience for students. The emphasis of transformational pedagogy is to get students to act out entrepreneurship.

Transformational pedagogy is characterized by high levels of practice outside the classroom environment. Neck and Greene (2011) describes this form of pedagogy as "teaching entrepreneurship as a method." This form of pedagogy forces students to go beyond knowing and understanding entrepreneurship concepts. "It requires using, applying, and acting" (Neck and Greene 2011, p. 55). In Béchard et al. (2005) archetypes of pedagogy, transformational pedagogy is analogous to the demand model. It is plausible to argue that experimentation can take place within a classroom environment (for example, role-play and simulations) and that such experimentation can also be impactful. Nonetheless, studies show that out of class

5 *CE = Concrete Experience; AC = Abstract Conceptualization;*
6 *RO = Reflective Observation; AE = Active Experimentation*

experiences offer *something distinct* (for example Waite 2011; Mayhew et al. 2016) and are linked to innovation (see Articles 1 and3).

We argue that out-of-class experiences give students the opportunity to balance the dialectic tension between assimilating new experiences into existing concepts and accommodating existing concepts into new experiences. By connecting out-of-class experiences and in-class experiences, students can make combinations that may lead to innovative ideas (Arranz et al. 2017) and students who participate in out-of-class experiences are more competent with higher levels of cognitive skills and self-management skills than those who do not (Sitra and Sasidhar 2005). Therefore, our position is that in-class experimentation exists in a controlled environment which can be necessary but not sufficient to replace the natural conditions of out of classroom environment.

Some examples of transformative experiential pedagogy include student business startups and internships. Both examples require students to use, apply and act out entrepreneurship concepts outside a classroom environment.

6.6.2 *Transitional Pedagogy*

The label transitional pedagogy is used here to refer to pedagogical methods that support two modes mode of grasping experience and one at least mode of transforming experience. In comparison to transformational pedagogy, transitional pedagogy focus on reflection as a means of transforming experience. Concrete experiences acquired by relying on senses (reading or listening) are the basis of reflections. Reflections are distilled to abstract concepts. Although there may be elements of experimentation, such activities are generally limited to the classroom. As such transitional pedagogy is usually character-

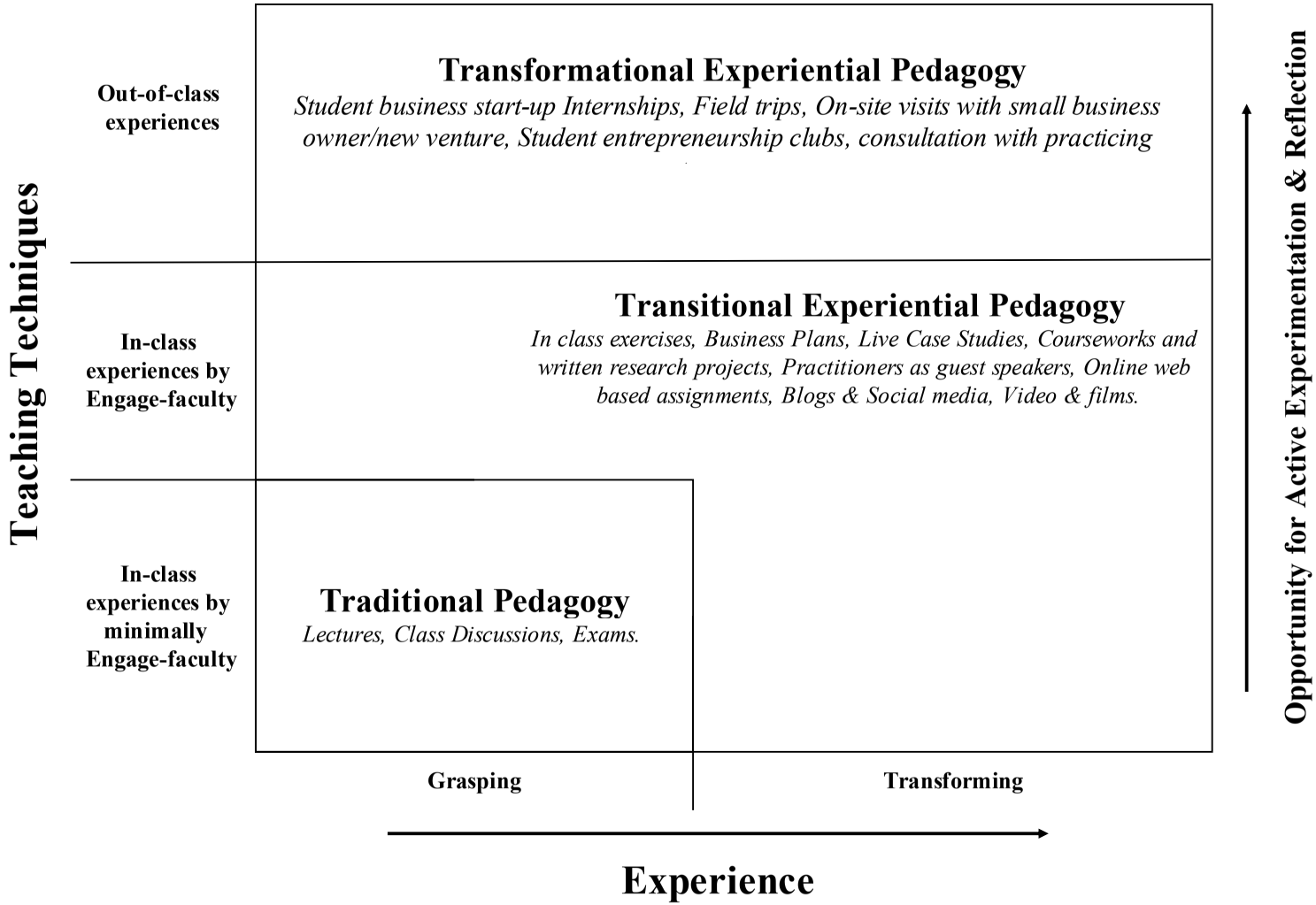


Figure 6.2: Pedagogy Typology and Characteristics

ized by in-class activities facilitated by engaged-faculty. We consider transitional pedagogy to be moderately experiential.

A broad range of pedagogical innovations used in entrepreneurship education falls into the transitional pedagogy. The utility of these pedagogical innovations vary from low to moderate based on the engaged-faculty experience - how dynamic and challenging an instructor makes the learning environment. For some pedagogical methods, in-class activities are the means of transforming experiences. Examples are role-plays, presentations and computer and behavioral simulations. While for others reflection is the means of transforming experiences. Examples include consultation with practicing entrepreneurs in class, "live" cases, class discussions, business plans, essays, and written research projects, use of videos, blogs, and social media (Mayhew et al. 2012). From Neck and Greene (2011) standpoint, transitional pedagogy is a hybrid of “process” and “cognition” approach to teaching entrepreneurship. Viewed through Béchard et al. (2005) archetypes, transitional pedagogy promote “communication and discussion” (e.g., seminar, presentations, debates) and knowledge “production” (e.g., essays, modeling, portfolios) that support the development of competences which can be mobilized for action (Béchard et al. 2005). The bottom line is that transitional pedagogy emphasizes thinking like an entrepreneur.

6.6.3 *Traditional Pedagogy*

Traditional pedagogy label is used here to describe pedagogical techniques that only support grasping experience mode without the opportunity of transforming experience. With these teaching techniques, concrete experience is acquired through senses (reading or listening) or thinking (abstract conceptualization). They usually take place within

the classroom with minimal engaged-faculty experiences. Examples include lecture-classroom, exams, reading, watching/listening. Admittedly, including videos as examples of traditional pedagogy can be controversial. However, viewed through the lens of the ELT, watching videos and films supports grasping experiences through the sense of sight and hearing or at best, through thinking. When used in isolation, videos are of little use in entrepreneurship education unless there is opportunity for transforming the experience acquired.

Traditional pedagogy has been described elsewhere as training by abstraction which is of little use in entrepreneurship education unless there is apprenticeship training (Brown, Collins, and Duguid 1989; Birch and Miller 2007; Birch 1979). Similar to the supply model in Béchard et al. (2005) archetype, the traditional pedagogy focuses on "transmission and reproduction of knowledge and application of procedures" (2005, p., 111) This form of pedagogy does not appear to significantly contribute to the orientation of students towards entrepreneurship (Mentoor and Friedrich 2007). Thus, our position is that traditional pedagogy is not consistent with the ELT.

6.7 A THEORETICAL EVALUATION OF THE PROPOSED PEDAGOGY TYPOLOGY

Although the proposed typology of entrepreneurship education pedagogy forms may have a degree of face validity, it is important to evaluate this typology using criteria suggested for the development of acceptable schemata. For this purpose, Hunt (1983) proposes five questions for evaluating the robustness of any classificational schemata. They are: Does the schema adequately specify the phenomenon to be classified? 2) Does the schema adequately specify the properties or characteristics that will be doing the classifying? 3) Does the schema

have categories that are mutually exclusive? 4) Does the schema have categories that are collectively exhaustive? 5) Is the schema useful? A robust classification schema should be able to answer the majority of Hunt's questions.

The current typology fairs well regarding the first question because the first two forms -transformative and transitional meet the definitional criteria of experiential pedagogy stated earlier in this paper while the third form - traditional- does not. In reference to the second question, it is possible to answer in the affirmative because the three forms have "distinct foci and empirical manifestations that are identified in the descriptions of these forms" (Covin and Miles 1999, p. 55). In other words, the characteristics of the forms -whether they involve engaged-faculty or out-of-class experiences; and what modes of ELT they support- were properly specified and consistently used throughout the discussion.

The criterion of mutual exclusivity is not satisfied by the current typology. Mutual exclusivity exists, according to Hunt (1983), when no single item will fit in more than one category. The current typology does not have this characteristic. The problematic matter here is that a teaching technique used in a learning classroom can be categorized as traditional or transitional based on how engaged the faculty might. For example, a traditional lecture might be considered experiential if the instructor is a practitioner. The use of video may be considered traditional or experiential based on the content of the video. Fortunately, Hunt (1983) notes that the failure to meet the mutual exclusivity standard does not disqualify classificational schemata. Many well-known typologies, according to Collier (2008), do not meet this criterion. Examples include Covin and Miles (1999) typology of corporate entrepreneurship.

Pedogogy Typology	Focus on experience	Teaching Techniques	Typical exampes	Impact on Innovative intentions and Behavior
Transformative	Supports all modes of grasping (CE and AC) and transforming (AE and RO) experiences.	engaged-faculty experiences + out-of-class experiences	Student Venture Startup and internships	High
Transitional	Supports modes of grasping (CE and AC) and transforming (AE and RO) experiences within the classroom.	engaged-faculty experiences	Practitioners as guest speakers and Live Cases	varies form moderate - High
Traditional	Supports modes of grasping (CE and AC) experience ONLY	In-class experiences	Lectures	Low

Transformative pedagogy: Pedagogy that support two modes of grasping (Concrete Experience & Abstract Conceptualization) and transforming (Reflective Observation & Active Experimentation) experience often in a recursive manner.

Transitional Pedagogy: Pedagogical methods that support two modes mode of grasping experience and one at least mode of transforming experience. If supported, experimentation only takes place within classroom environment.

Tranditional Pedagogy: Describe pedagogical techniques that only support grasping experience mode without the opportunity of transforming experience.

Figure 6.3: Some Key Attributes of the Three Forms of Pedagogy

The fourth question - Does the schema have categories that are collectively exhaustive? - can be answered in the affirmative when applied to entrepreneurship education because the three forms identified in the typology constitute a spectrum of pedagogy encompassing all teaching techniques used in entrepreneurship education.

The fifth question-Is the schema useful?-can be answered in the affirmative on at least two bases. First, the proposed typology represents a rare attempt to unpack the experiential pedagogy phenomena for the purpose of facilitating a better understanding of how it works. Second, the proposed typology can be empirically operationalized for the purpose of theory testing, the results of which may eventually contribute to the understanding of the links between pedagogy and innovation.

Overall, it can be concluded that while the proposed typology is not beyond all criticism, it enjoys many of the properties that make a classification schema theoretically sound and useful. Thus, the current typology represents a reasonable starting point in an attempt to demystify experiential pedagogy from a theoretical perspective.

6.8 CONCLUSIONS

This theoretical exploration of the experiential pedagogy was motivated by the observation that there is a poor understanding of why experiential pedagogy supports or at least is assumed to support, innovative capabilities. Based on the preceding discussions, one response to this uncertainty should be clearer. That is, experiential pedagogy is a function of engaged-faculty and out-of-class experiences; and involves at least one mode of grasping and one mode of transforming experience. On this basis, we proposed a novel typology of the forms of experiential pedagogy: Transformational and Transitional. The main

difference between transformational and transitional pedagogy is that the former involves out-of-class experiences while the latter is limited to classroom experiences. The typology proposed here arguably helps to unpack the nuances of pedagogy in entrepreneurship education and enables researchers to understand why it "works" with respect to innovative outcomes.

One reason why experiential pedagogy may support innovative capabilities is that either transformational of transitional forms of experiential pedagogy presents the opportunity for active experimentation and reflection within any entrepreneurship program. Experimentation and reflection are critical elements of experiential pedagogy. For example, when applied in an entrepreneurship course, transformational pedagogy allow students to use, apply and act out entrepreneurship concepts outside a classroom environment. Experimentation is the focus transformational pedagogy. Studies have shown that out of class experiences offer *something distinct*. By connecting out-of-class experiences and in-class experiences, students can make combinations that may lead to innovative ideas (see Articles 1 and 2).

On the other hand, transitional pedagogy can be used where pedagogical efforts are limited to the classroom because transitional pedagogy focuses on reflection as a means of transforming experience. In other words, transitional pedagogy emphasizes thinking like an entrepreneur. In short, we argue that experiential pedagogy "works" because of the opportunity for active experimentation and/or reflection.

This paper contributes to the theory of experiential pedagogy in two ways. First, by deconstructing the experiential pedagogy phenomena to advance the understanding of how it "works." Second, by proposing a novel parsimonious pedagogy typology for more consistent

delineation of various teaching methods. As Doty and Glick (1994) state, typologies are unique forms of theory building.

From a practical standpoint, this paper shows that transitional pedagogy can be used where pedagogical efforts are limited to the classroom. For example, educators can use practicing entrepreneurs, live case studies and written projects to encourage reflection as a means of *transforming* experiences as per ELT.

Part III

CONCLUSIONS

The final chapter, Chapter Seven, presents a summary and synthesis of the findings and conclusions from the Chapters four, five and six, as well as their implications for theory and practice.

7

CONCLUSIONS

Abstract

This thesis contains three articles aimed at exploring experiential pedagogy and its links to innovative entrepreneurship. The thesis was motivated by two distinct but related research gaps: a) the need to explore the links between experiential pedagogy and innovative entrepreneurship; b) to deconstruct experiential pedagogy to shed light on its inner workings. Using mixed-method research strategy, exploratory sequential design, and based on Nigerian Higher Education Institutions, these two main issues were addressed via three articles in Chapters 4, 5, and 6 respectively. Chapters 4 and 5 (i.e., Articles 1 and 2) addressed the first research gap. Chapter 6 (Article 3) addressed the second research gap. Broadly, this thesis makes two novel theoretical contributions. The first relates to the decisive role of experiential pedagogy and perceived behavioral control in the development of innovative intentions which is a precursor to innovative entrepreneurship. Secondly, by proposing a novel pedagogy typology, the thesis contributes to the understanding of the nuances of pedagogy in entrepreneurship education and allows researchers to more precisely delineate experiential pedagogy from traditional pedagogy.

7.1 SUMMARY OF EMPIRICAL FINDINGS

Table 7.1 shows a summary of the main findings and contributions from the three articles in this thesis. Each article addresses each of the three research questions stated in Chapter 1: RQ1: How does pedagogy relate to innovative entrepreneurship in a resource constrained environment?; RQ2: Can experiential pedagogy influence intent to innovate?; RQ3 How is experiential pedagogy constructed? Collectively, the three articles address the main objective of this thesis: "exploring experiential pedagogy and its links to innovative entrepreneurship."

Figure 7.1 illustrates the connexions across the three articles and how they collectively address the main objective of this thesis. As shown in the diagram, Article 1 shows that experiential pedagogy can stimulate aspirations for innovative entrepreneurship which is a precursor to innovative entrepreneurship. Article 2 extends the findings of Article 1 by identifying the mediating role of perceived behavioral control. Article 3 unpacks experiential pedagogy to explain "how it works."

7.1.1 *Article 1: The Making of Innovative Entrepreneurs in Business Schools: Lessons From a Resource Constrained Environment*

Research Questions:
RQ1: How does pedagogy relate to innovative entrepreneurship in a resource constrained environment?

While nurturing innovation has become a central rather than peripheral focus of entrepreneurship education in most Business Schools in the West, the link between pedagogy and innovative entrepreneurship remains under explored. The findings from Article 1 (a case study research) revealed that using experiential pedagogical methods in entrepreneurship education stimulates innovation outcomes by *inspiring* students' attitudes and affinity for innovative entrepreneurship. Put differently, the article showed that experientially based teaching promotes a transformation of attitude and feasibility of innovation

	Article 1: The making of innovative entrepreneurs in Business Schools: Lessons From a Resource Constrained Environment	**Article 2:** Putting Pedagogy where Intention to Act Lies: Evaluating Compulsory Entrepreneurship Education	**Article 3:** Towards a Theory of Experiential Pedagogy
Overaching Purpose	***Explore experiential pedagogy and its links to innovative entrepreneurship***		
Research Questions	How does pedagogy relate to innovative entrepreneurship in a resource constrained-environment?	Can experiential pedagogy influence intent to innovate?	How is experiential pedagogy constructed?
Research Design	Case Study research	Quantitative Research	Conceptual Study
Main Findings	The findings show that using experiential pedagogical methods in entrepreneurship education stimulates innovation learning outcomes. Specifically, student business startups and the use of practitioners strongly inspires students attitude and affinity for innovative entrepreneurship.	Evidence of the decisive role of experiential pedagogy. Specifically: a) out-of-class experiences (an element of experiential Pedagogy) significantly increases intentions to innovate; (b) behavioral control mediates the relationship between out-of-class experiences and changes in intention to innovate	Experiential Pedagagoy involves modes of grasping and transforming experience described in the experiential learning theory. Teaching practices can involve out-of-class experiences and in-class experiences facilitated by engaged-faculty. The higher the opportunity for active experimentation with any pedagogy, the more experiential the pedagogy
Main Contributions	1) Article contributes to innovative entrepreneurship theory by providing evidence that experiential pedagogy is linked to innovative entrepreneurship. 2) Contributes to entrepreneurship education theory by: •Confirming that using practitioners as educators is useful because it inspires students to change their attitude and confidence for entrepreneurship. •Providing new perspectives of how context affects higher education behavior in terms of designing entrepreneurship education curriculum and pedagogy	1) By providing evidence of the direct effect of out-of-class- room-experience on intention to innovate, and the indirect effect of engaging-faculty on intention to innovate, this study provides evidence of how to train innovative entrepreneurs 2) Contributes to theory of planned behavior and experiential learning theory	Presents a NOVEL typology of the forms of pedagogy used in entrepreneurship education: Contributes to the theory of Experiential Pedagogy. Three labels proposed are 1) Transformational Pedagogy: Supports both grasping and transforming knowledge, involves high opportunities for active experimentation of knowledge and generally includes out-of-class activities. 2) Transitional Pedagogy: Supports opportunities for grasping and transforming knowledge. However these opportunities take place in-class. 3) Traditional Pedagogy: Involves opportunity for grasping experience only. Teaching practices take place within the classroom only.

Table 7.1: Summary of Findings of the Three Articles

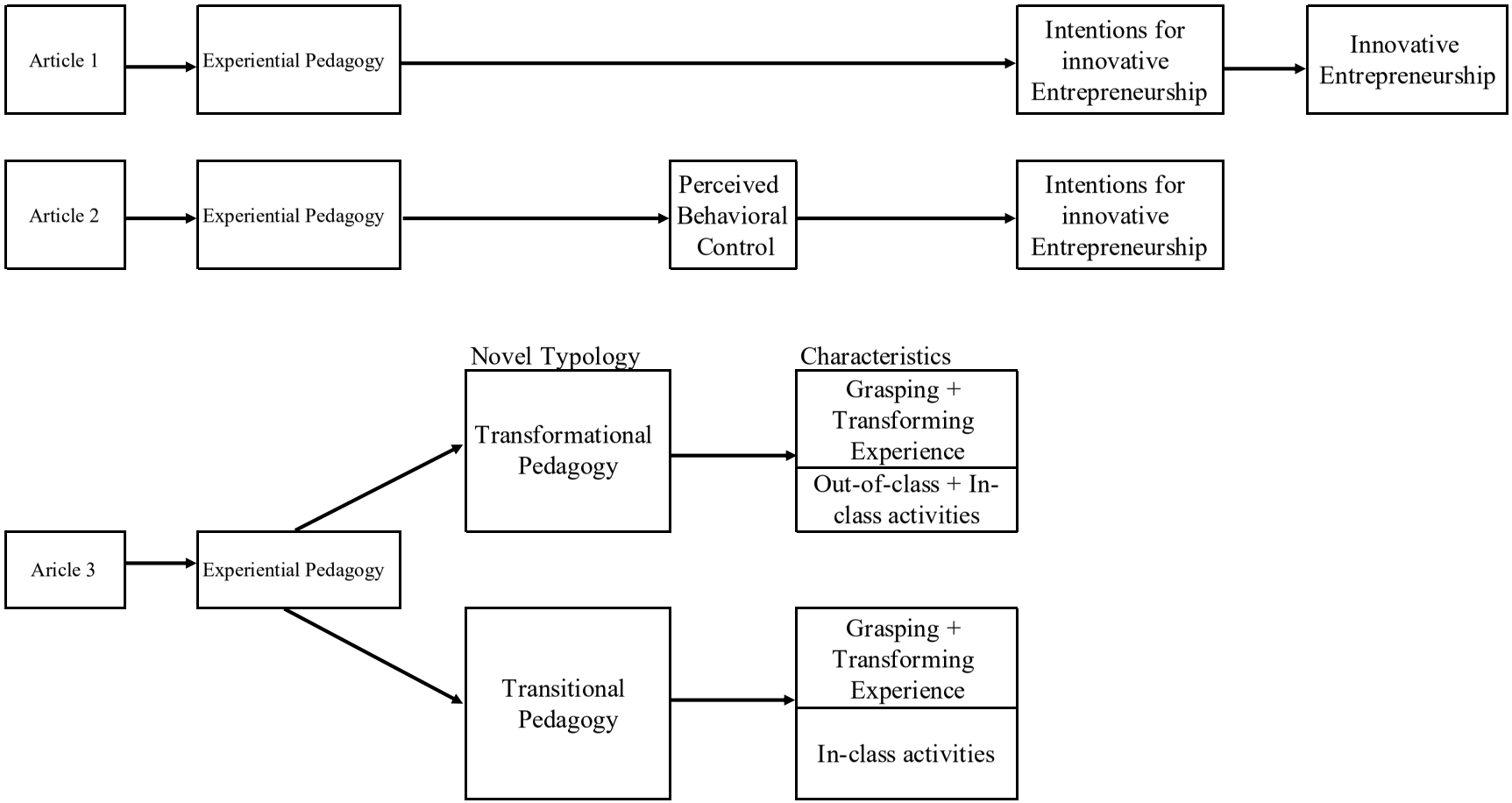


Figure 7.1: Connexions of the three Articles in this thesis

which triggers innovative aspirations. Specifically, the use of student business startups and practitioners was found to have a profound impact on students innovative aspirations. One explanation is that startup activities enable students to *experiment* with what they learn in class; to experience, first hand, the challenges of entrepreneurship and to reflect on the outcome of their activities. Experimentation is critical for transforming students' notion of entrepreneurship and enabling them to draw new conclusions about the nature of entrepreneurship.

Moreover, the article shows that to maximize impact in a resource constrained environment, curriculum and pedagogy should be contextualized. In short, the findings of Article 1 are summarized as a set of propositions explaining the links between experiential pedagogical methods and innovative aspirations and behaviors: *1) Experiential pedagogy will raise the aspiration of students for entrepreneurship; 2) Experiential pedagogy raises innovative aspirations and increases the likelihood of innovative entrepreneurship.* These propositions inform the hypotheses raised in article 2 (a quantitative research).

7.1.2 *Article 2: Evaluating Compulsory Entrepreneurship Education Across Private and Public Universities in Nigeria*

Research Questions:

RQ2.1: Can experiential pedagogy influence intent to innovate?

RQ2.2: Does a compulsory course in entrepreneurship education affect students' intention to innovate?

RQ2.3: Does the impact of compulsory courses in entrepreneurship education vary across public and private universities?

As noted in Chapter 1 (on page 6), the antecedents of innovative entrepreneurship are poorly understood. Innovative entrepreneurship as a behavior is hard to observe, rare and involves unpredictable time lags. Therefore, it is the kind of planned behavior for which

the intention model is suited. Based on the logic of Ajzen's (1991) theory of planned behavior, Article 2 developed and tested three sets of hypotheses. All three sets of hypotheses are based on the two propositions in Article. It is important to emphasize that Article 2 distinguished entrepreneurial intention from specialized intent to innovate.

The first set of hypotheses (see 5.3.3) state that compulsory entrepreneurship education can elicit changes in entrepreneurial intention (aspiration of students for entrepreneurship) and intent to innovate (innovative aspirations).

The second set of hypotheses (see 5.3.4) state the role of experiential pedagogy in explaining the changes in entrepreneurial intention and intent to innovate. Specifically, the second set of hypotheses predicts that experiential pedagogy (a) positively influences changes in attitude and perceived behavioral control (sometimes referred to as self-efficacy or perceived feasibility) (b) directly and indirectly supports innovative intentions[1]. By this logic, attitude and perceived behavioral control are two critical mediators that can help to explain innovative intentions.

The third set of hypotheses (see 5.3.5) state that the degree of changes in entrepreneurial intention and intent to innovate will vary across public versus private universities. By studying the effects of contextual factors (such as university type) and the use of experiential pedagogy on these mediators and on innovative intentions in a resource constraint environment we can increase understanding of the antecedents of innovative entrepreneurship. Article 2 addressed these research issues.

In short, building on the propositions of Article 1 and drawing on the theory of planned behavior, Article 2 examined whether (a) experiential pedagogy (posited as a function of out-of-class-experiences and

1 The implicit assumption here is that innovative intentions subsequently predicts innovative entrepreneurial behavior.

engaging-faculty) can influence students' intent to innovate—RQ2.1; (b) compulsory entrepreneurship education can elicit increase in students' intent to innovate — RQ2.2; and c) whether contextual factors such as university type (public versus private) affect the outcome of compulsory entrepreneurship education - RQ2.3.

The findings showed that RQ2.1 can be answered in the affirmative because both engaged-faculty and out-of-class experiences support intent to innovate. Specifically, out-of-class experiences, directly and indirectly, support intent to innovate, while engaged-faculty indirectly[2] supports intent to innovate. RQ2.2 can be answered in the affirmative because the compulsory entrepreneurship education evaluated in the article supports behavioral control which in turn affects the changes in intent to innovate. Regarding RQ2.3, the evidence is mixed. On the one hand, there is evidence that the impact of compulsory entrepreneurship education on *behavioral control* and *attitude towards entrepreneurship* varies across public and private universities. On the other hand, there was no significant evidence that the impact of compulsory entrepreneurship education on *intent to innovate* varies across public and private universities. In fact, the article revealed that university type – public or private – has no direct significant effect on the students' intention to innovate. Therefore RQ2.3 can be answered only partly.

Together, the results of Article 2 showed that regardless of university type experiential pedagogy (out-of-class experiences and engaged faculty) generates positive perception of feasibility of entrepreneurship (perceived behavioral control) which consequently raises intent to innovate. The implication here is that perceived behavioral control is a mediator. By identifying the mediating role of perceived behavioral

[2] The indirect effects of out-of-class experiences and engaged faculty are through perceived behavioral control.

control, this thesis makes a valuable contribution to the understanding of the antecedents of innovative entrepreneurship.

7.1.3 *Article 3: Towards a Theory of Experiential Pedagogy*

Research Questions:
RQ3.1: How is experiential pedagogy constructed?
RQ3.2: How can pedagogy be categorized?

Although Articles 1 and 2 shed light on the utility of experiential pedagogy regarding innovation, why it "works" is still shaded in "mystery." The lack of a pedagogy typology for more consistent delineation of various teaching methods further exacerbates the "problem." Article 3 addresses these research issues. To address RQ3.1, Article 3 posited experiential pedagogy as a function of engaged-faculty and out-of-class experiences. Experiential pedagogy was defined, consistent with experiential learning theory, as teaching practices that engage students within and beyond the classroom to learn by action and reflection in order to draw conclusions on alternative ways to act differently. By this definition, the article argues that experimentation (action) and reflection are critical elements of experiential pedagogy.

Regarding RQ3.2, Article 3 provided a novel pedagogy typology that is underpinned by four propositions which are consistent with experiential learning theory. The propositions are: (a) Experiential pedagogy involves at least one mode of grasping experience[3] (concrete experience, or abstract conceptualization) and one mode of transforming experience (active experimentation, or reflective observation); (b) Experiential pedagogy involves out-of-class learning experiences; (c) Experiential Pedagogy is supported by engaged-faculty; (d) Experiential pedagogy is supported by practice-oriented curriculum.

3 The modes of grasping and transforming experiences are consisted with Kolb (1984) experiential learning theory.

Based on these propositions the article categorized pedagogy using the following labels: Transformational, Transitional and Traditional (see Section §6.6). The first two labels — transformational and transitional — describe various forms of experiential pedagogy. The main difference between transformational and transitional is that the former involves out-of-class experiences while the latter is limited to classroom experiences. The third label "traditional pedagogy" describes non-experiential pedagogy. The typology proposed here helps to unpack the nuances of pedagogy in entrepreneurship education. In this way, the typology can also helps researchers to understand why experiential pedagogy "works" with respect of innovative outcomes. Experiential pedagogy, as the typology suggests, "works" because of the opportunities for experimentation and reflection.

7.2 CONCLUSIONS ON EXPERIENTIAL PEDAGOGY AND INNOVATIVE ENTREPRENEURSHIP

Synthesizing the findings from Articles 1, 2, and 3, the following section explains the effects of experiential pedagogy as well as the role of perceived behavioral control, a "critical" antecedent of innovative intention, in understanding how experiential pedagogy links to innovative entrepreneurship.

7.2.1 *The Effects of Experiential Pedagogy*

As Article 1 revealed, the use of student business startups and practitioners has a significant impact on students' innovative aspirations. One explanation for this is that experiential pedagogical methods such as startup-activities enable students to experiment with knowledge they gain in class, experience, first hand, the challenges of entrepreneurship and reflect on the outcome of their activities. Experimentation and reflection can transform students' notion of en-

trepreneurship and enable them to draw new conclusions about the nature of entrepreneurship (see article 3 also).

Also, experiential pedagogical methods such as the use of practitioners, motivate and inspire students (see Article 1). As Souitaris, Zerbinati, and Al-Laham (2007) note, inspiration (a construct with an emotional element) is an influential benefit of entrepreneurship education. Inspiration changes attitudes and intentions to innovate and increases the likelihood that students will attempt innovative entrepreneurship at some point in their lives. The evidence in Article 1 indicates that the use of practitioners along with other experiential pedagogical techniques stimulates innovative intentions and increases the chances that a student will start a business that will likely be innovative within five years of graduation (see Articles 1 and 2). Therefore, if the purpose of entrepreneurship education is to nurture innovative entrepreneurs, then instructors and practitioners who can inspire a change of "hearts and minds" (Souitaris, Zerbinati, and Al-Laham 2007) should be recruited.

Furthermore, as Article 2 reveals, out-of-class experiences such as student business start-ups are more likely than in-class experiences with faculty to influence innovative intentions regardless of contextual factors such as university type and they compulsory element of entrepreneurship education (see Article 2). An explanation is that out-of-class activities allow students to develop closer links between theory on one hand, and practice on the other. By connecting out-of-class experiences and in-class experiences, students can make combinations that may lead to innovative ideas for innovative entrepreneurship.

7.2.2 *Perceived Behavioral Control as a Catalyst*

Although Article 2 predicted that attitude and perceived behavioral control (self-efficacy) are mediators of the effect of experiential pedagogy on innovative intentions, the evidence in the article shows that

only perceived behavioral control mediates the relationship between out-of-class experiences and changes in intention to innovate. This evidence highlights how experiential pedagogy affects innovative intentions. It is important to identify such mechanisms because knowledge about them allows us to conceptualize entrepreneurship education in terms of what is relevant to future innovative entrepreneurs. For example, to nurture innovative entrepreneurs, educators could design entrepreneurship education in a way that helps students to develop a higher sense of feasibility (perceive behavioral control) for innovation. One way to achieve this can be through student startups and other out-of-class experiences. Extant literature shows that self–efficacy is increased by practical experience related to starting a business. In short, to nurture innovative entrepreneurs, entrepreneurship education especially needs to give students the opportunity to experiment with their business ideas and reflect on the outcomes and ways to improve on them.

7.3 THEORETICAL CONTRIBUTIONS AND IMPLICATIONS

The conceptualization of experiential pedagogy and examination of its links to innovative entrepreneurship offer important benefits for entrepreneurship education and innovative entrepreneurship research.

First, the evidence in this thesis indicates that Ajzen's (1991) theory of planned behavior provides a useful framework for explaining the effects of entrepreneurship education on innovative entrepreneurship and the role of experiential pedagogy in a developing country context. Although the theory has previously been applied to entrepreneurship education (Rauch and Hulsink 2015; Fayolle, Gailly, and Lassas-Clerc 2006b; Peterman and Kennedy 2003), researchers usually do not distinguish between general intention for entrepreneurship and more specific intention for innovative entrepreneurship. This distinction is vital since innovative entrepreneurship is different from general

entrepreneurship and as other researchers have noted, it requires a different set of skills set, curriculum and pedagogy (Block, Fisch, and Van Praag 2017). By applying Ajzen's (1991) model to innovative entrepreneurship and demonstrating that the perceived behavioral control for predicting innovative intentions, this thesis contributes to the theory of planned behavior.

The lack of mediator effects of attitude on innovative intentions could be a methodological limitation because attitudes and perceived behavioral control were highly interrelated, both in this thesis and in other studies, as reported by Rauch and Hulsink (2015). On the other hand, the participants in this thesis were university students who are yet to have the opportunity to demonstrate innovative entrepreneurship (e.g., receive patents, procure resources from venture capitalists) and face unpredictable timescale for venture creation. It is possible that the self-efficacy (behavioral control) part of Ajzen's (1991) is more critical at this stage of students' journey to innovative entrepreneurship, whereas self-efficacy and inspirational parts of Ajzen's model are essential at the early stages of a person's entrepreneurial career. Consequently, the perceived behavioral control part of Ajzen's (1991) model is a strong predictor of innovative intention.

Second, this thesis contributes to the field of innovative entrepreneurship by identifying the mediating effect of perceived behavioral control in the relationship between experiential pedagogy and innovative intention (See Figure 7.2). This evidence is consistent with Autio et al. (2001) who found that perceived behavioral control has the strongest relationship with intentions but contrary to Rauch and Hulsink (2015) who did not find the mediator effects of perceived behavioral control. Identifying this mediating effect is important because knowledge about it contributes to the understanding of the antecedents of innovative entrepreneurship (Davidsson 2007; Gielnik et al. 2015). By

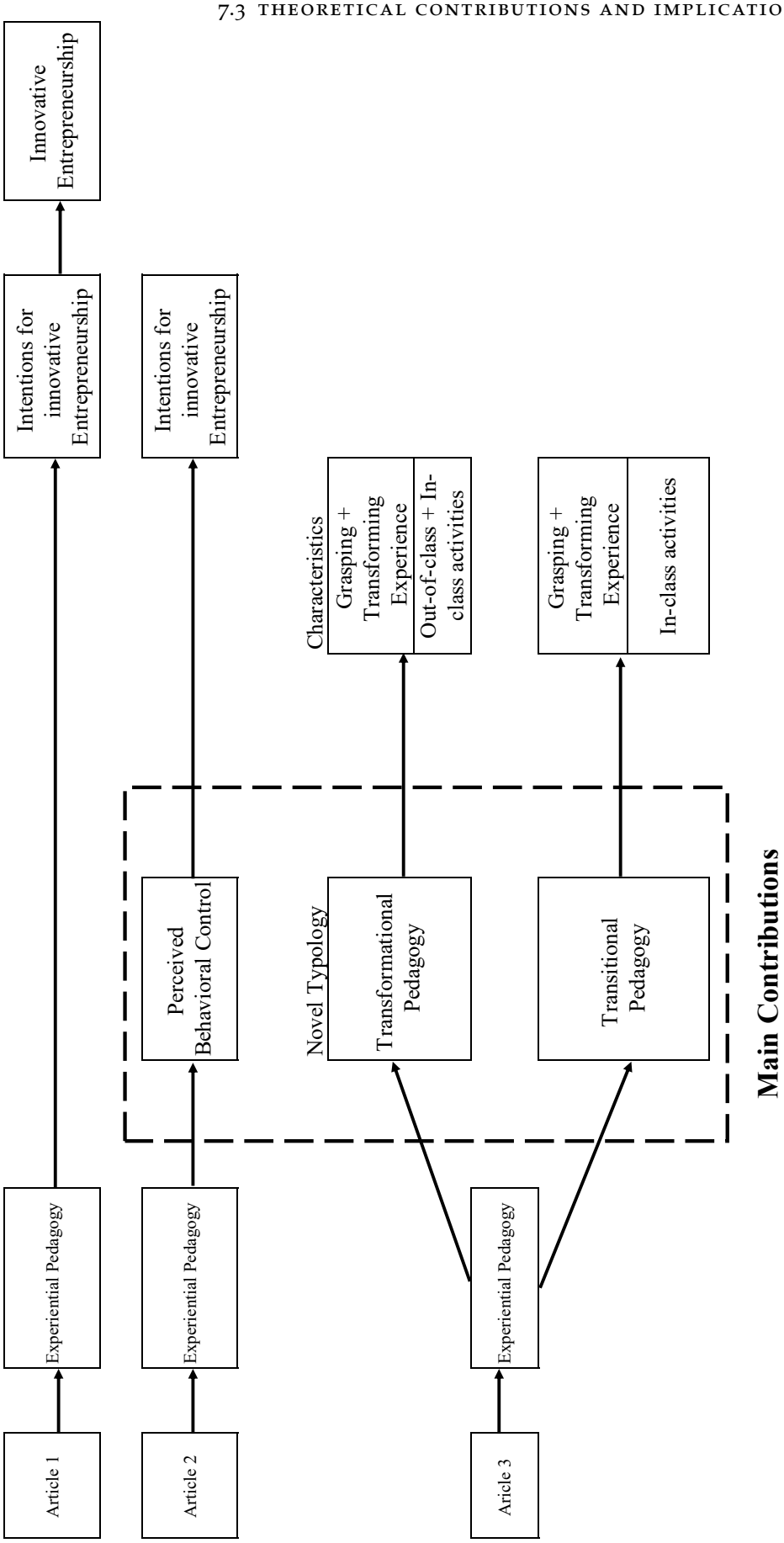


Figure 7.2: Summary of Findings of the Three Articles

extension, identifying the mediator is also important because of its implications for training innovative entrepreneurs. In this way this thesis also adds to growing knowledge of how higher education influences innovative entrepreneurship.

Third, it contributes to the understanding of the nuances of pedagogy in entrepreneurship education by proposing a novel pedagogy scale (See Figure 6.2 and Figure 7.2). This scale enables researchers to more precisely delineate experiential pedagogy from traditional pedagogy. It also categorizes experiential pedagogy in order of its consistency with experiential learning theory. In this respect, researchers can map the links between various experiential pedagogical methods and entrepreneurial outcomes more precisely.

Fourth, it contributes to experiential learning theory by providing evidence that confirms that pedagogical methods consistent with the theory promote higher learning outcomes related to innovation (Neck and Greene 2011; Neck, Greene, and Brush 2014; Rasmussen and Sørheim 2006; Rauch and Hulsink 2015; Gielnik et al. 2015).

Lastly, the thesis contributes to entrepreneurship education theory by shedding light on the effects of contextual factors (e.g., the compulsory element of course in entrepreneurship and university-type — public or private) and pedagogical methods (Nabi et al. 2017) on entrepreneurial intention and innovative intention. By exploring contextual factors and pedagogical methods in a single study, this thesis contributes new perspectives on evidence examining the effects of compulsory entrepreneurship courses. Moreover, by providing evidence of the benefits of entrepreneurship education from a resource constrained environment, this thesis contributes to the developing entrepreneurship education theory and its applications in developing African country context.

7.4 PRACTICAL IMPLICATIONS

The evidence from this thesis is relevant for policymakers who are interested to find out whether the policy on entrepreneurship education generates intended effects or unintended effects, and whether those effects are consistent across public and private universities. The evidence in this thesis indicates that providing compulsory entrepreneurship education in higher education can be a valuable education policy.

In practice, entrepreneurship education should develop the self-efficacy of students by increasing practical experience related to starting a business. In other words, teaching people how to write a business plan is not enough. Instead, the aim should be to give students the opportunity(ies) to experiment with their business ideas and reflect on the outcomes and ways to improve on them as this may lead to innovative entrepreneurial behavior. Thus, entrepreneurship education needs to move beyond knowing and understanding and begin to apply otherwise theoretical concepts to the real world (Neck and Greene 2011) and enable its students to actively exploit opportunities that are imagined, shaped, and created in an entrepreneurial process (Sarasvathy 2009). To summarize, the thesis provides evidence of the decisive role of experiential pedagogical practices for training innovative entrepreneurs.

7.5 LIMITATIONS

When interpreting the results of this thesis, one has to take into account that the studied participants are within a single context - the Nigerian Higher Education context. Intention models have been tested in different countries and have been replicated in different contexts (Liñán and Chen 2009). However, there are regional and cross-country differences in entrepreneurial intention (Nowiński et al. 2017; Bae et al. 2014; Olomi and Sinyamule 2009; Lee et al. 2006).

Whether the relationship between entrepreneurship education and innovative intention is context-dependent is not clear, given the limited number of studies examining this relationship (Mayhew et al. 2012; Block, Fisch, and Van Praag 2017). On the other hand, while this thesis finds that the effects of experiential pedagogy transcends the effect of compulsory element of entrepreneurship course and university type, it is not clear whether experiential pedagogy will have similar effects in other developing country contexts. In other words, whether the effectiveness of experiential pedagogy depends on the context needs to be examined in future studies.

Also, there are other factors such as the availability of educational material and the quality of the students that can affect entrepreneurial intention but that were not studied in this thesis. Future studies can collect relevant data and either add them as control variables or test their effects.

One of the strengths of this thesis is the use of a mixed-methods research strategy as discussed in Chapter 3. As explained in the chapter, the strategy enabled exploring, in-depth, how entrepreneurship education can affect aspirations for innovative entrepreneurship (Article 1); and testing the generalizability of the propositions about the former. However, one of the disadvantages of mixed methods research is that in mixing qualitative and quantitively research there is a danger that one does not do either sufficiently or properly. Replicating the studies in this thesis over multiple research settings can further strengthen the evidence presented in the thesis. Future studies can explore this opportunity.

An argument can be made about whether the impacts of traditional and experiential pedagogy should have been compared in this thesis. Such a comparison can shed more light on the nuanced effects of pedagogy in entrepreneurship education. This thesis could not make such

comparison because relevant data on traditional pedagogy was not collected. Future studies should explore this opportunity to contribute to entrepreneurship education.

Last, although this thesis focused on three contextual factors: resource constraints, compulsory pedagogy and private versus public university types, many other contextual factors can affect the outcome of entrepreneurship education. For example, socio-cultural factors such as norms, values, and beliefs of the various ethnic groups in Nigeria could have been explored. Also, studying the effect of political factors such as instability linked to the activities of armed militias (in the South-Southern region of the country) and terrorists of Boko Haram (in the North-Eastern region of the country) could add new knowledge to the role of context in entrepreneurship education. However, for safety reasons data was not collected from those regions.

7.6 FUTURE RESEARCH

There are two main areas for future research. First, this thesis has shown that entrepreneurship education affects innovative intention; however, attitudes and perceived behavioral control do not always predict intentions and intentions are not always translated into behavior. Future research should focus on other sources of innovative intentions and innovative entrepreneurship. It is likely, for example, that moderators are affecting the link between perceived behavioral control and innovative intention and between innovative intention and innovative entrepreneurship. High opportunity costs, to name one, may prevent some students who score high on perceived behavioral control from developing the intention to become an innovative entrepreneur. The availability of resources and institutional forces may affect the relationship between people's innovative intentions and subsequent innovative entrepreneurship (Lee 2015). Thus, there are contextual issues that affect the outcomes of entrepreneurship education that

have not been addressed in this thesis. Furthermore, Gollwitzer (1999) stressed that intentions are not sufficient to predict behavior because people are wrapped up in their daily routines. Rather, Gollwitzer argued that intentions need to be succeeded by *implementation intentions* that are mental representations linking intentions with goal-directed behavior. These arguments suggest that future research should address mediating processes that transmit the effect of entrepreneurship education on behavior. Consequently, it makes sense for future research to evaluate a) whether innovative entrepreneurship translates to innovative entrepreneurship using a longitudinal research design. b) moderator factors that influence innovative entrepreneurship.

Second, this thesis proposed a systematic categorization scale for pedagogical methods. It made suggestions as to which type of experiential pedagogy is most suitable for stimulating innovative intentions (Rauch and Hulsink 2015; Peterman and Kennedy 2003). The specific effects of different experiential pedagogical methods can be compared in true experiments, for example, by randomly assigning students to them. Alternatively, different experiential pedagogical methods could be evaluated relying on quasi-experimental design. Future research would have to compare different experiential pedagogical methods and their effects on innovative intentions and innovative entrepreneurship.

Part IV

APPENDIX

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APPENDIX

A.1 QUESTIONNAIRE AT TIME T1

Impact of EE on Innovation Intentions and Innovation Behaviour

Hello and thank you for agreeing to take this survey!

The aim of this research is to explore the impact of compulsory entrepreneurship course and campus elements such as entrepreneurship centers, curriculum & co-curricular activities as well as pedagogy on students' aspirations to become an entrepreneur.

I am interested in collecting data from third year students in Nigerian Universities who are about to start a compulsory entrepreneurship course (or about to end a compulsory entrepreneurship course). The first reason for this is because in most universities, students are allowed to take this course from third year. To be able to compare results with other institutions it is reasonable to maintain a common level of study. Another reason is I assume that at this level of study you might have started to seriously think about life after graduation and to consider your options on graduation. Therefore, understanding how this entrepreneurship course affects your aspirations and how you feel about entrepreneurship as a potential career as well as how other experiences on campus such as extracurricular activities and how you are taught shape your aspirations and feelings towards entrepreneurship is important to help program planners and policy makers design better strategies to make this course more impactful. Also your experiences might help other students make more informed choices.

To understand your aspirations, this questionnaire will ask you several questions about your University experiences and what you plan to do on graduation. You are expected to answer them to the best of your knowledge to enable correct snapshot of your aspirations.

The survey will take about 15 minutes to complete. And as a token of appreciation for your time, they will be entered into a Prize Draw. The number of winners and the amount to be won will be communicated to your class at the time of completing this questionnaire. Please enter your email address at the end of the survey to enter the prize draw.

Data will be stored in a personal computer, encrypted and password protected. Data will only be accessed by the researcher and the supervisors. Email address will only be use for the Prize Draw and will be deleted afterwards. No personal information will be revealed to any third party. However, with your permission, age, gender, level of study, department, and background might be used for the purpose of analysis.

Outputs of he research include research thesis, journal papers, conference publications and book chapters, as well as recommendations and feedback to policy makers and University Management. If you have any questions about the research been conducted please do not hesitate to contact Victor Udeozor, a member of the research team on lixvu@nottingham.ac.uk or WhatsApp +4474[redacted]

This research is sponsored by the Vice Chancellor of the University of Nottingham and Nottingham University Business School.

1

1. On a scale of 1 to 100 how likely do you consider it to be that you will be running your own firm within five years from now? *The higher the number the higher the likelihood*. Write the number below.

   ☐

2. Indicate your level of agreement with the following statements from 1 (***total disagreement***) to 7 (***total agreement***)

	1	2	3	4	5	6	7
I am ready to do anything to be an **entrepreneur**	O	O	O	O	O	O	O
My professional goal is to become an **entrepreneur**	O	O	O	O	O	O	O
I will make every effort to start and run my own firm	O	O	O	O	O	O	O
I am determined to create a firm in the future	O	O	O	O	O	O	O
I have very seriously thought of starting a firm	O	O	O	O	O	O	O
I have the firm intention to start a firm some day	O	O	O	O	O	O	O

3. Please indicate how effective you are in each of the following areas:

	Extremely Ineffective	Somewhat Ineffective	Neither Ineffective nor Effective	Somewhat effective	Extremely Effective
Identifying new opportunities (such as a new product or service a more effective way of accomplishing tasks, or a new way to solve a common social problem)	O	O	O	O	O
Developing a strategy to direct your and others' efforts in the direction of realizing new opportunities (such as developing an action plan).	O	O	O	O	O
Acquiring resources necessary to realize a new opportunity (such as area/topic expertise).	O	O	O	O	O
Creating an entity to take advantage of a new opportunity (for example, an organization devoted to the new opportunity).	O	O	O	O	O

4. Please indicate your level of agreement/disagreement with each of the following statement about why you want to start a business:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Starting a business is one of several possible career options	O	O	O	O	O
I feel compelled to start my own business because all other options for work are either absent or unsatisfactory	O	O	O	O	O

5. If you were to develop a product or service, please indicate your level of agreement/ disagreement with each of the following statement about such product or service:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Potential customers will consider such product or service as new and unfamiliar	O	O	O	O	O
Right now, are there so many other businesses offering the same products or services to my potential customers	O	O	O	O	O
The critical technology in my business has been available in Nigeria since 2010	O	O	O	O	O
My potential customers will require new knowledge or skill to use this product or service	O	O	O	O	O
Making this product or service DOES NOT require new set of skills or knowledge	O	O	O	O	O
Similar product or service has been in the market for over 5 years	O	O	O	O	O
My product or service can be exported out of the country	O	O	O	O	O
My product is EXACTLY SIMILAR to other products or services in the market	O	O	O	O	O

6. Indicate your level of agreement with the following sentences from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
Being an entrepreneur implies more advantages than disadvantages to me	O	O	O	O	O	O	O
A career as entrepreneur is attractive for me	O	O	O	O	O	O	O
If I had the opportunity and resources, I'd like to start a firm	O	O	O	O	O	O	O
Being an entrepreneur would entail great satisfactions for me	O	O	O	O	O	O	O
Among various options, I would rather be an entrepreneur	O	O	O	O	O	O	O

7. To what extent do you agree with the following statements regarding your entrepreneurial capacity? Value them from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
To start a firm and keep it working would be easy for me	O	O	O	O	O	O	O
I am prepared to start a viable firm	O	O	O	O	O	O	O
I can control the creation process of a new firm	O	O	O	O	O	O	O
If I tried to start a firm, I would have a high probability of succeeding	O	O	O	O	O	O	O

8. Indicate your level of agreement/disagreement with each of the followings statements:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Faculty challenge me to think outside of the box to create solutions to problems presented in class	O	O	O	O	O
Faculty ask me to show how a particular course concept could be applied to an actual problem or situation	O	O	O	O	O
Faculty ask me to point out any fallacies in basic ideas, principles, or points of view represented in the course	O	O	O	O	O

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Faculty ask me to argue for or against a particular point of view	O	O	O	O	O
Faculty encourage me to explore original ideas	O	O	O	O	O

9. Indicate how often you experienced the following:

	Never	Rarely	Occasionally	Often	Very Often
Exams or assignments required me to create or innovate solutions to presented problems	O	O	O	O	O
Exams or assignments required me to use course content to address a problem not presented in the course	O	O	O	O	O

10. Select the response that best fits the frequency with which faculty or coursework emphasized these activities:

	Not at All	Very Little	Sometimes	Quite a Bit	Very Much
Creating solutions to problems	O	O	O	O	O
Applying new theories to practices problems or in new situations	O	O	O	O	O

11. Please indicate your response by selecting the option that fills in the blank. Since coming to university ... *For example if you have **never** ran for formal leadership positions, tick **zero** in the appropriate column.*

	Zero	One	Two	Three to Five	Six or More
I have served as a leader of ___ school-based organizations, clubs, teams, and/or performance groups	O	O	O	O	O
I ran for ___ formal leadership positions	O	O	O	O	O
I have served as a leader of ____ non-school-based organizations, teams, or clubs	O	O	O	O	O

	Zero	One	Two	Three to Five	Six or More
I have served as a leader on ____ service and/or community-oriented projects	O	O	O	O	O

12. Indicate your level of agreement/disagreement with each of the followings statements:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
My out-of-class experiences had a positive influence on my intellectual growth and ideas	O	O	O	O	O
My out-of-class experiences had a positive influence on my personal growth, attitude, and values	O	O	O	O	O
My out-of-class experiences helped me to connect what I learned in the classroom with life events	O	O	O	O	O
My out-of-class experiences helped me translate knowledge and understanding from the classroom into action	O	O	O	O	O

13. To the best of my knowledge, the following practices were used in my entrepreneurship course. (*check all that apply*)

- [ ] Student business start-up
- [ ] Internships
- [ ] Business start-up competition
- [ ] Field trips - to companies
- [ ] Student entrepreneurship clubs
- [ ] consultation with practicing entrepreneurs
- [ ] On−site visits with small business owner/new venture
- [ ] Guest Speakers (by business owners and practitioners)
- [ ] Online web based assignment
- [ ] Use of online blogs social media
- [ ] Lectures that very interactive where lecturers stimulate classroom discussion
- [ ] Live cases analysis
- [ ] Use of video and films for entrepreneurship course(s)
- [ ] Business Plans
- [ ] Case Studies
- [ ] Course works and written research projects such as feasibility studies
- [ ] Exams
- [ ] In class exercises.
- [ ] Class Discussions
- [ ] One way Lectures where students only listens
- [ ] Other (please specify)

14. On a scale of 1 to 10 how experiential (*i.e the practice exposes you to experience entrepreneurship*) do you consider the 'other' practice you mentioned above to be, *where 1 is* ***not experiential*** *and 10* ***extremely experiential.*** *Please select ONE only.*

1	2	3	4	5	6	7	8	9	10

15. To the best of my knowledge, my campus has the following (*check all that apply*):

- Entrepreneurship center
- General Entrepreneurship/Small-Business student organization(s)
- Social Entrepreneurship student organization(s)
- Living-Learning Community/Residence Hall Focused on Innovation and/or Entrepreneurship
- "Maker space" or other small-business development laboratory
- Faculty I can speak with if I have a business idea
- Faculty I can speak with if I have an idea for a non-profit organization
- Entrepreneurship/Small-Business Competitions

16. What level of education are you studying?
    - ○ Undergraduate
    - ○ Postgraduate
17. Are you ***CURRENTLY*** undertaking an academic course focused on entrepreneurship?
    - ○ Yes
    - ○ No
    - ○ Not Sure
18. Is this entrepreneurship course **COMPULSORY**?
    - ○ Yes
    - ○ No
19. Did you voluntarily choose to take this course?
    - ○ Yes
    - ○ No
20. I have taken an academic course focused on innovation
    - ○ Yes
    - ○ No
    - ○ Not Sure
21. I have taken an academic course focused on creativity
    - ○ Yes
    - ○ No
    - ○ Not Sure
22. Have you taken an entrepreneurship course such as a General Studies Programme, GSP/ GES ***BEFORE in the last 5 years*** ?
    - ○ Yes
    - ○ No
23. Your age today is?
    - ○ Less than 18
    - ○ 18
    - ○ 19
    - ○ 20

- ○ 21
- ○ 22-25
- ○ 26-30
- ○ 31+

24. With what gender do you identify?
    - ○ Man
    - ○ Woman
    - ○ I prefer not to respond
25. Has a member of your family ever **invented (that is created something that never existed)** a new product, service, or process?
    - ○ Yes
    - ○ No
26. Has a member of your family ever **started** a new business or non-profit organization?
    - ○ Yes
    - ○ No
27. What is the name of your institution?

    [ ]
28. My undergraduate major was in the following area:
    - ○ Arts/Humanities/Fine and Performing Arts
    - ○ Business Administration, Management or Entrepreneurship
    - ○ Career and Technical Education (CTE)
    - ○ Communication Arts/Media Arts
    - ○ Economics
    - ○ Education
    - ○ Government/International Relations
    - ○ Law/Pre-Law
    - ○ Physical and/or Rehabilitation Sciences
    - ○ Science, Technology, Engineering, and Math (STEM)
    - ○ Medical Sciences and Medicine
    - ○ Other (please specify)

    [ ]
29. Thank you for completing this survey. If you would like to enter the prize draw for N3000, please enter your email address below.

    [ ]

A.2 QUESTIONNAIRE AT TIME T2

Impact of EE on Innovation Intentions and Innovation Behaviour

Hello and thank you for agreeing to take this survey!

This survey is part of Project INNET (Innovative Entrepreneurship) a research being conducted by the Nottingham University Business School, UK.

The following pages will ask you several questions about your aspirations and University experiences. Please answer them to the best of your knowledge. The survey has been approved by the ethics board of the University of Nottingham, UK. The data will only be used for research purposes.

The survey will take about 15 minutes to complete. And as a token of appreciation for your time, you will be entered into a **Prize Draw** to **win N1000**. There will be 10 lucky winners in your class and you can be the lucky one. Just complete the questionnaire correctly and write your email address at the end of the survey to enter the prize draw.

If you are completing this survey online, please click "Done" to submit your responses.

If you have any questions about the research been conducted please do not hesitate to contact Victor Udeozor, a member of the research team on lixvu@nottingham.ac.uk or WhatsApp +447[redacted]

1. On a scale of 1 to 100 how likely do you consider it to be that you will be running your own firm within five years from now? *The higher the number the higher the likelihood*. Write the number below.

   ☐

2. Indicate your level of agreement with the following statements from 1 (***total disagreement***) to 7 (***total agreement***)

	1	2	3	4	5	6	7
I am ready to do anything to be an **entrepreneur**	O	O	O	O	O	O	O
My professional goal is to become an **entrepreneur**	O	O	O	O	O	O	O
I will make every effort to start and run my own firm	O	O	O	O	O	O	O
I am determined to create a firm in the future	O	O	O	O	O	O	O
I have very seriously thought of starting a firm	O	O	O	O	O	O	O
I have the firm intention to start a firm some day	O	O	O	O	O	O	O

3. Please indicate how effective you are in each of the following areas:

	Extremely Ineffective	Somewhat Ineffective	Neither Ineffective nor Effective	Somewhat effective	Extremely Effective
Identifying new opportunities (such as a new product or service a more effective way of accomplishing tasks, or a new way to solve a common social problem)	O	O	O	O	O
Developing a strategy to direct your and others' efforts in the direction of realizing new opportunities (such as developing an action plan).	O	O	O	O	O
Acquiring resources necessary to realize a new opportunity (such as area/topic expertise).	O	O	O	O	O
Creating an entity to take advantage of a new opportunity (for example, an organization devoted to the new opportunity).	O	O	O	O	O

4. Please indicate your level of agreement/disagreement with each of the following statement about why you want to start a business:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Starting a business is one of several possible career options	O	O	O	O	O
I feel compelled to start my own business because all other options for work are either absent or unsatisfactory	O	O	O	O	O

5. If you were to develop a product or service, please indicate your level of agreement/ disagreement with each of the following statement about such product or service:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Potential customers will consider such product or service as new and unfamiliar	O	O	O	O	O
Right now, are there so many other businesses offering the same products or services to my potential customers	O	O	O	O	O
The critical technology in my business has been available in Nigeria since 2010	O	O	O	O	O
My potential customers will require new knowledge or skill to use this product or service	O	O	O	O	O
Making this product or service DOES NOT require new set of skills or knowledge	O	O	O	O	O
Similar product or service has been in the market for over 5 years	O	O	O	O	O
My product or service can be exported out of the country	O	O	O	O	O
My product is EXACTLY SIMILAR to other products or services in the market	O	O	O	O	O

6. Indicate your level of agreement with the following sentences from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
Being an entrepreneur implies more advantages than disadvantages to me	O	O	O	O	O	O	O
A career as entrepreneur is attractive for me	O	O	O	O	O	O	O
If I had the opportunity and resources, I'd like to start a firm	O	O	O	O	O	O	O
Being an entrepreneur would entail great satisfactions for me	O	O	O	O	O	O	O

	1	2	3	4	5	6	7
Among various options, I would rather be an entrepreneur	O	O	O	O	O	O	O

7. To what extent do you agree with the following statements regarding your entrepreneurial capacity? Value them from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
To start a firm and keep it working would be easy for me	O	O	O	O	O	O	O
I am prepared to start a viable firm	O	O	O	O	O	O	O
I can control the creation process of a new firm	O	O	O	O	O	O	O
If I tried to start a firm, I would have a high probability of succeeding	O	O	O	O	O	O	O

8. Indicate your level of agreement/disagreement with each of the followings statements:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Faculty challenge me to think outside of the box to create solutions to problems presented in class	O	O	O	O	O
Faculty ask me to show how a particular course concept could be applied to an actual problem or situation	O	O	O	O	O
Faculty ask me to point out any fallacies in basic ideas, principles, or points of view represented in the course	O	O	O	O	O
Faculty ask me to argue for or against a particular point of view	O	O	O	O	O
Faculty encourage me to explore original ideas	O	O	O	O	O

9. Indicate how often you experienced the following:

	Never	Rarely	Occasionally	Often	Very Often
Exams or assignments required me to create or innovate solutions to presented problems	O	O	O	O	O

Exams or assignments required me to use course content to address a problem not presented in the course	O	O	O	O	O

10. Select the response that best fits the frequency with which faculty or coursework emphasized these activities:

	Not at All	Very Little	Sometimes	Quite a Bit	Very Much
Creating solutions to problems	O	O	O	O	O
Applying new theories to practices problems or in new situations	O	O	O	O	O

11. Please indicate your response by selecting the option that fills in the blank. Since coming to university ... *For example if you have **never** ran for formal leadership positions, tick **zero** in the appropriate column.*

	Zero	One	Two	Three to Five	Six or More
I have served as a leader of ___ school-based organizations, clubs, teams, and/or performance groups	O	O	O	O	O
I ran for ___ formal leadership positions	O	O	O	O	O
I have served as a leader of ____ non-school-based organizations, teams, or clubs	O	O	O	O	O
I have served as a leader on ____ service and/or community-oriented projects	O	O	O	O	O

12. Indicate your level of agreement/disagreement with each of the followings statements:

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
My out-of-class experiences had a positive influence on my intellectual growth and ideas	O	O	O	O	O
My out-of-class experiences had a positive influence on my personal growth, attitude, and values	O	O	O	O	O

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
My out-of-class experiences helped me to connect what I learned in the classroom with life events	O	O	O	O	O
My out-of-class experiences helped me translate knowledge and understanding from the classroom into action	O	O	O	O	O

13. To the best of my knowledge, the following practices were used in my entrepreneurship course. (*check all that apply*)

- Student business start-up
- Internships
- Business start-up competition
- Field trips - to companies
- Student entrepreneurship clubs
- consultation with practicing entrepreneurs
- On−site visits with small business owner/new venture
- Guest Speakers (by business owners and practitioners)
- Online web based assignment
- Use of online blogs social media
- Lectures that very interactive where lecturers stimulate classroom discussion
- Live cases analysis
- Use of video and films for entrepreneurship course(s)
- Business Plans
- Case Studies
- Course works and written research projects such as feasibility studies
- Exams
- In class exercises.
- Class Discussions
- One way Lectures where students only listens
- Other (please specify)

14. On a scale of 1 to 10 how experiential (*i.e the practice exposes you to experience entrepreneurship*) do you consider the 'other' practice you mentioned above to be, *where 1 is* ***not experiential*** *and 10* ***extremely experiential.*** *Please select ONE only.*

1	2	3	4	5	6	7	8	9	10

15. To the best of my knowledge, my campus has the following (*check all that apply*):

- Entrepreneurship center

- General Entrepreneurship/Small-Business student organization(s)
- Social Entrepreneurship student organization(s)
- Living-Learning Community/Residence Hall Focused on Innovation and/or Entrepreneurship
- "Maker space" or other small-business development laboratory
- Faculty I can speak with if I have a business idea
- Faculty I can speak with if I have an idea for a non-profit organization
- Entrepreneurship/Small-Business Competitions

16. What level of education are you studying?
    - Undergraduate
    - Postgraduate
17. Are you ***CURRENTLY*** undertaking an academic course focused on entrepreneurship?
    - Yes
    - No
    - Not Sure
18. Is this entrepreneurship course **COMPULSORY**?
    - Yes
    - No
19. Did you voluntarily choose to take this course?
    - Yes
    - No
20. I have taken an academic course focused on innovation
    - Yes
    - No
    - Not Sure
21. I have taken an academic course focused on creativity
    - Yes
    - No
    - Not Sure
22. Have you taken an entrepreneurship course such as a General Studies Programme, GSP/ GES ***BEFORE in the last 5 years*** ?
    - Yes
    - No
23. Your age today is?
    - Less than 18
    - 18
    - 19
    - 20
    - 21
    - 22-25
    - 26-30
    - 31+
24. With what gender do you identify?
    - Man
    - Woman
    - I prefer not to respond
25. Has a member of your family ever **invented (that is created something that never existed)** a new product, service, or process?
    - Yes

- No

26. Has a member of your family ever **started** a new business or non-profit organization?
    - Yes
    - No
27. What is the name of your institution?

28. My undergraduate major was in the following area:
    - Arts/Humanities/Fine and Performing Arts
    - Business Administration, Management or Entrepreneurship
    - Career and Technical Education (CTE)
    - Communication Arts/Media Arts
    - Economics
    - Education
    - Government/International Relations
    - Law/Pre-Law
    - Physical and/or Rehabilitation Sciences
    - Science, Technology, Engineering, and Math (STEM)
    - Medical Sciences and Medicine
    - Other (please specify)

29. Thank you for completing this survey. If you would like to enter the prize draw for N3000, please enter your email address below.

A.3 CODING OF THE QUESTIONNAIRE - SCALES FOR MEASUREMENT

Coding the Survey Questions for my Research –Impact of EE in Nigeria

Entrepreneurial Behaviour - Rauch and Helsinki 2015 (Q1)

- On a scale of 1 to 100 how likely do you consider it to be that you will be running your own firm within five years from now?

Entrepreneurial Intention – Liñán & Chen 2009 (Q2)

- Indicate your level of agreement with the following statements from 1 to 7
    a. I am ready to do anything to be an entrepreneur
    b. My professional goal is to become an entrepreneur
    c. I will make every effort to start and run my own firm
    d. I am determined to create a firm in the future
    e. I have very seriously thought of starting a firm
    f. I have the firm intention to start a firm some day

Intention to Innovate - Mayhew et. Al 2012 (Q3)

- Please indicate how effective you are in each of the following areas: from extremely ineffective to extremely effective
    a. Identifying new opportunities (such as a new product or service a more effective way of accomplishing tasks, or a new way to solve a common social problem)
    b. Developing a strategy to direct your and others' efforts in the direction of realizing new opportunities (such as developing an action plan).
    c. Acquiring resources necessary to realize a new opportunity (such as area/topic expertise).
    d. Creating an entity to take advantage of a new opportunity (for example, an organization devoted to the new opportunity).

Intention to replicate (assessing motivation) – Mayhew et. Al 2012 (Q4-5)

- Please indicate your level of agreement/disagreement with each of the following statement about why you want to start a business: from strongly disagree to strongly agree
    a. Starting a business is one of several possible career options
    b. I feel compelled to start my own business because all other options for work are either absent or unsatisfactory
- If you were to develop a product or service, please indicate your level of agreement/disagreement with each of the following statement about such product or service: from strongly disagree to strongly agree
    a. Potential customers will consider such product or service as new and unfamiliar
    b. Right now, are there so many other businesses offering the same products or services to my potential customers

c. The critical technology in my business has been available in Nigeria since 2010
d. My potential customers will require new knowledge or skill to use this product or service
e. Making this product or service DOES NOT require new set of skills or knowledge
f. Similar product or service has been in the market for over 5 years
g. My product or service can be exported out of the country
h. My product is EXACTLY SIMILAR to other products or services in the market

Attitude – Liñán & Chen 2009 (Q6)

- Indicate your level of agreement with the following sentences from 1 (total disagreement) to 7 (total agreement).
    a. Being an entrepreneur implies more advantages than disadvantages to me
    b. A career as entrepreneur is attractive for me
    c. If I had the opportunity and resources, I'd like to start a firm
    d. Being an entrepreneur would entail great satisfactions for me
    e. Among various options, I would rather be an entrepreneur

Perceived Behavioural Control — Liñán & Chen 2009 (Q7)

- If you decided to create a firm, would people in your close environment approve of that decision? Indicate from 1 (total disapproval) to 7 (total approval).
    a. To start a firm and keep it working would be easy for me
    b. I am prepared to start a viable firm
    c. I can control the creation process of a new firm
    d. If I tried to start a firm, I would have a high probability of succeeding

Engaging Faculty Influence Challenging Learning Environment – Mayhew et. Al 2012 (Q8)

- Indicate your level of agreement/disagreement with each of the followings statements: from strongly disagree to strongly agree
    a. Faculty challenge me to think outside of the box to create solutions to problems presented in class
    b. Faculty ask me to show how a particular course concept could be applied to an actual problem or situation
    c. Faculty ask me to point out any fallacies in basic ideas, principles, or points of view represented in the course
    d. Faculty ask me to argue for or against a particular point of view
    e. Faculty encourage me to explore original ideas

Assessment – Mayhew et. Al 2012 (Q9)

- Indicate how often you experienced the following: from never to really

    a. Exams or assignments required me to create or innovate solutions to presented problems
    b. Exams or assignments required me to use course content to address a problem not presented in the course
- Select the response that best fits the frequency with which faculty or coursework emphasized these activities: (Q10) from not at all to quite a bit
    a. Creating solutions to problems
    b. Applying new theories to practices problems or in new situations

Leadership Activities – Mayhew et. Al 2012 (Q11)

- Please indicate your response by selecting the option that fills in the blank. Since coming to university ... from 0 – 6 or more
    a. I have served as a leader of ___ school-based organizations, clubs, teams, and/or performance groups
    b. I ran for ___ formal leadership positions
    c. I have served as a leader of ____ non-school-based organizations, teams, or clubs
    d. I have served as a leader on ____ service and/or community-oriented projects

Out-of-Class-Experiences /Connecting experiences – Mayhew et. Al 2012 (Q12)

- Indicate your level of agreement/disagreement with each of the followings statements: from strongly disagree to strongly agree
  Think of your out-of-class experience in a broad sense that includes any activity you engaged in whilst studying at the university.
    a. My out-of-class experiences had a positive influence on my intellectual growth and ideas
    b. My out-of-class experiences helped me to connect what I learned in the classroom with life events
    c. My out-of-class experiences helped me translate knowledge and understanding from the classroom into action
    d. My out-of-class experiences had a positive influence on my personal growth, attitude, and values

Experiential Practices – (Q13 & 14)

- To the best of my knowledge, the following practices were or will be used in my entrepreneurship course
    a. Student business start-up
    b. Internships
    c. Business start-up competition
    d. Field trips - to companies
    e. Student entrepreneurship clubs
    f. consultation with practicing entrepreneurs
    g. On-site visits with small business owner/new venture

h. Guest Speakers (by business owners and practitioners)
i. Online web based assignment
j. Use of online blogs social media
k. Lectures that very interactive where lecturers stimulate classroom discussion
l. Live cases analysis
m. Use of video and films for entrepreneurship course(s)
n. Business Plans
o. Case Studies
p. Course works and written research projects such as feasibility studies
q. Exams
r. In class exercises
s. Class Discussions
t. One way Lectures where students only listens

- On a scale of 1 to 10 how experiential (i.e. the practice exposes you to experience entrepreneurship) do you consider the 'other' practice you mentioned above to be, where 1 is not experiential and 10 extremely experiential. (14)

Campus Environment – Mayhew et. Al 2012 (Q15)

- To the best of my knowledge, my campus has the following (check all that apply)
    a. Entrepreneurship center
    b. General Entrepreneurship/Small-Business student organization(s)
    c. Social Entrepreneurship student organization(s)
    d. Living-Learning Community/Residence Hall Focused on Innovation and/or Entrepreneurship
    e. “Maker space” or other small-business development laboratory
    f. Faculty I can speak with if I have a business idea
    g. Faculty I can speak with if I have an idea for a non-profit organization
    h. Entrepreneurship/Small-Business Competitions

Level of Study – (Q16)

- Level of study UG or PG

Entrepreneurship Course (Q17)
Curriculum (Q20 and Q21)
Compulsory Element (Q18 AND Q19)
Gender (Q24)
Age (Q23)
Entrepreneurial Kin (Q25 and Q26)
Mode of Programme
Prior exposure (Q22)
Name of Institution (Q27)
Program of Study (Q28)

A.4 CONFIRMATORY FACTOR ANALYSIS

Hypothesis

H1: Compulsory Entrepreneurship Education and Intent to Innovate

a) The change in ATA is positively related to change in Int2Inv
b) The change in ATA is positively related to a change in EI
c) The change in PBC is positively related to the change in Int2Inv
d) The change in PBC is positively related to the change in EI

H2 Experiential Pedagogy: Faculty and Out of Classroom Activities

a) Out of Class experiences have positive effect on the change in ATA
b) Out of Class experiences have positive effect on the change in PBC
c) Out of Class experiences have positive effect on the change in Int2Inv
d) Out of Class experiences have positive effect on the change in EI
e) Faculty Influences have positive effect on the change in ATA
f) Faculty Influences have positive effect on the change in PBC
g) Faculty Influences have positive effect on the change in Int2Inv
h) Faculty Influences have positive effect on the change in EI

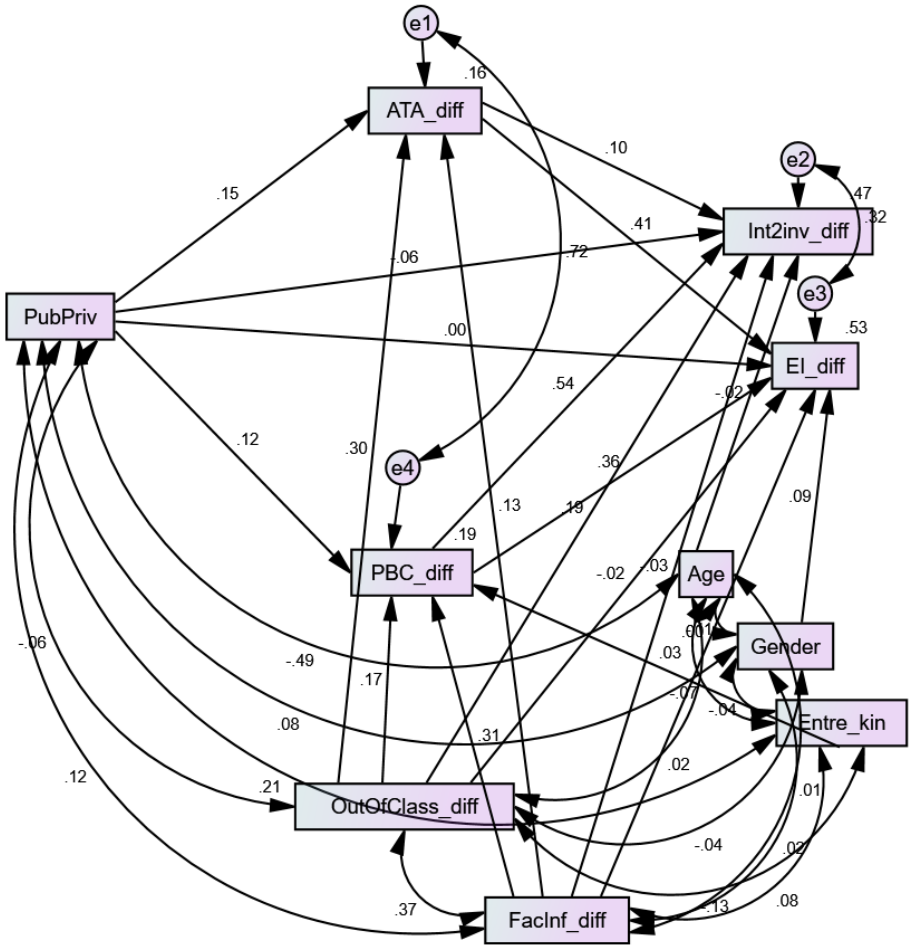
Public Versus Private University effect on Intention and its Antecedents

a) Students in Private Universities will have greater increase in ATA after compulsory entrepreneurship education than students in Public universities.
b) Students in Private Universities will have greater increase in PBC after compulsory entrepreneurship education than students in Public universities.
c) Students in Private Universities will have greater increase in Int2Inv after compulsory entrepreneurship education than students in Public universities.
d) Students in Private Universities will have greater increase EI after compulsory entrepreneurship education than students in Public universities.

Code names

EI_diff = Entrepreneurial Intention (T2-T1)
Inv2inv_diff = intention to Innovate (T2-T1)
ATA_diff = Attitude (T2-T1)
PBC_diff = Perceived behavioural Control (T2-T1)
OutOfClass_diff = Out of Class Experiences (T2-T1)
Facing_diff = Engaged Faculty Influence (T2-T1)
PubPriv = Public and Private University groups

MODEL 1


e1
.16
ATA_diff
.10
e2
.47
.32
.15
.41
Int2inv_diff
.06
.72
PubPriv
e3
.53
.00
EI_diff
.54
-.02
.12
.30
e4
.36
.13
.19
.09
.19
PBC_diff
-.02
.03
Age
-.06
.001
Gender
-.49
.03
.17
-.07
-.04
Entre_kin
.08
.31
.02
.12
.21
OutOfClass_diff
.01
-.04
.02
.37
FacInf_diff
-.13
.08

Model 1 Regression Weights: (Group number 1 - Default model) used only diff values

			Unstandardized Estimate	Standardized Estimates	S.E.	P
ATA_diff	<---	PubPriv	.541	.151	.176	.002
PBC_diff	<---	PubPriv	.318	.120	.129	.014
PBC_diff	<---	OutOfClass_diff	.234	.171	.071	***
ATA_diff	<---	OutOfClass_diff	.557	.301	.097	***
ATA_diff	<---	FacInf_diff	.229	.131	.092	.013
PBC_diff	<---	FacInf_diff	.402	.310	.067	***
PBC_diff	<---	Entre_kin	.081	.029	.094	.387
Int2inv_diff	<---	PubPriv	-.096	-.056	.077	.213
EI_diff	<---	PubPriv	.000	.000	.152	.998
Int2inv_diff	<---	ATA_diff	.048	.099	.029	.102
Int2inv_diff	<---	PBC_diff	.351	.541	.040	***
EI_diff	<---	ATA_diff	.472	.414	.065	***
EI_diff	<---	PBC_diff	.559	.363	.089	***
Int2inv_diff	<---	OutOfClass_diff	.170	.191	.039	***
EI_diff	<---	OutOfClass_diff	-.046	-.022	.087	.592
EI_diff	<---	FacInf_diff	.008	.004	.083	.919
Int2inv_diff	<---	FacInf_diff	-.026	-.031	.038	.490
Int2inv_diff	<---	Age	-.007	-.017	.018	.681
EI_diff	<---	Gender	.357	.089	.138	.009

I took the difference between post and pre values (T2 - T1) for all our variables. The controls were age, gender and entrepreneurial kin.

PBC predict intent to innovate and entrepreneurial intention

ATA predicts entrepreneurial intention but not intent to innovate.

Faculty does not affect entrepreneurial intention, EI and intent to innovate

OutOfClass activities positively affect intention to innovate but not entrepreneurial intention

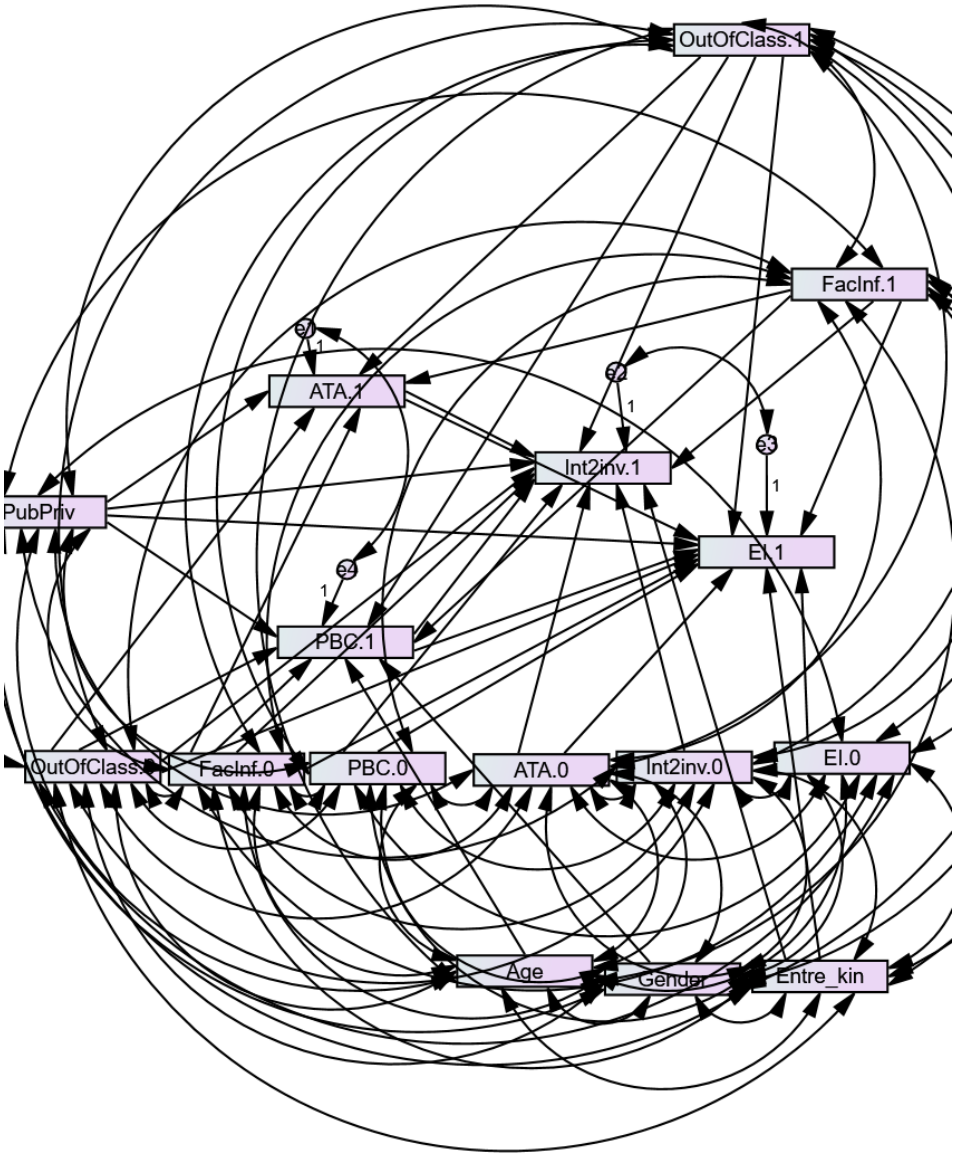
Faculty and out of class experiences affects ATA and PBC

PrivPub variable affect ATA and PBC which means that students in private school have greater raise in ATA and PBC after CEE

But there was no evidence that they had greater raise in intentions

The t-Test we ran support this finding because at the start students in public uni had higher ATA and PBC at the pre. This difference was not there in the post.

MODEL 2


OutOfClass.1
FacInf.1
e1
1
ATA.1
e2
1
e3
Int2inv.1
1
PubPriv
EI.1
e4
1
PBC.1
OutOfClass.0
FacInf.0
PBC.0
ATA.0
Int2inv.0
EI.0
Age
Gender
Entre_kin

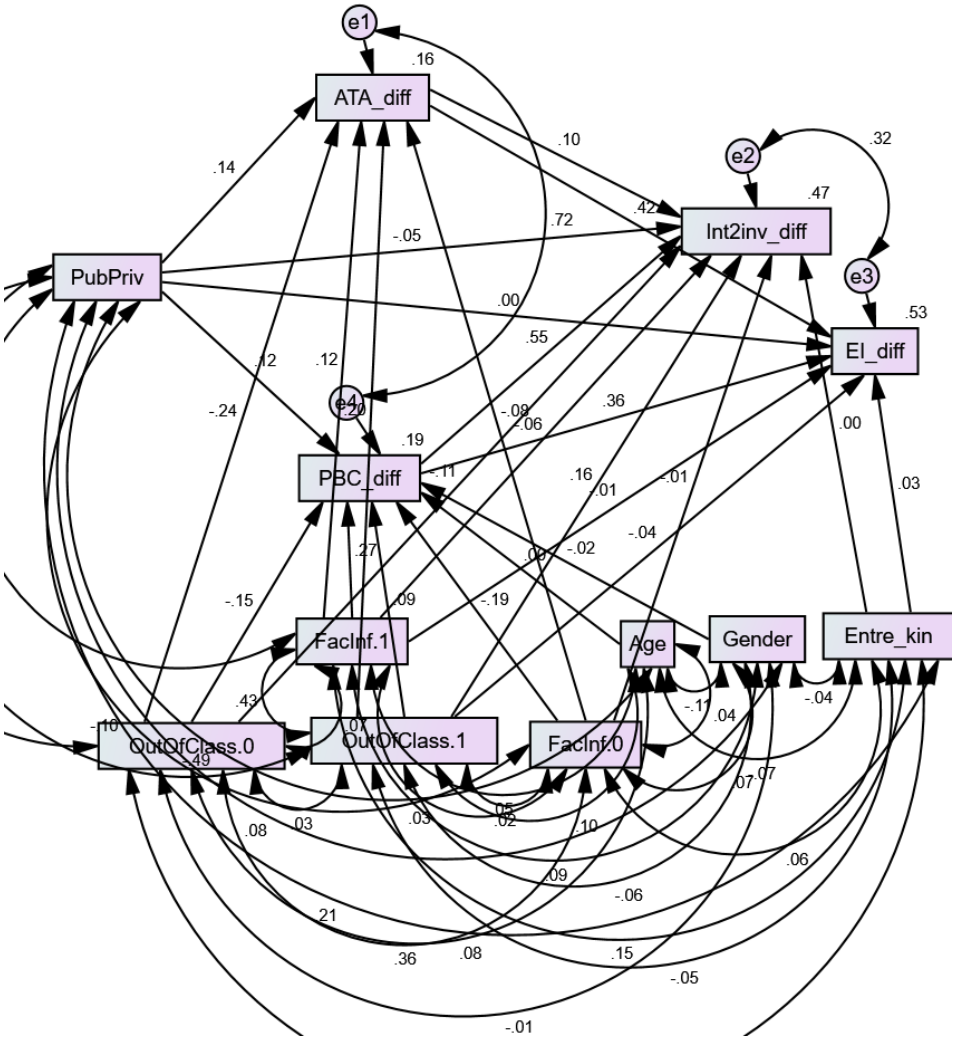
Model 2 Regression Weights: (Group number 1 - Default model) used post values and controlled for the pre values

			Unstandardized Estimate	Standardized Estimates	S.E.	P
ATA.1	<---	FacInf.1	.284	.161	.097	.003
PBC.1	<---	FacInf.1	.420	.316	.070	***
ATA.1	<---	OutOfClass.1	.471	.259	.100	***
PBC.1	<---	OutOfClass.1	.261	.191	.072	***
ATA.1	<---	PubPriv	.200	.074	.136	.141
PBC.1	<---	PubPriv	.080	.040	.104	.440
PBC.1	<---	Age	.024	.050	.018	.168
PBC.1	<---	Gender	-.027	-.014	.063	.670
PBC.1	<---	OutOfClass.0	.076	.048	.080	.341
ATA.1	<---	OutOfClass.0	-.010	-.005	.110	.929
PBC.1	<---	FacInf.0	-.119	-.083	.073	.102
ATA.1	<---	FacInf.0	-.060	-.031	.101	.552
Int2inv.1	<---	FacInf.1	-.049	-.055	.040	.229
EI.1	<---	FacInf.1	-.095	-.047	.090	.290
Int2inv.1	<---	OutOfClass.1	.140	.153	.041	***
EI.1	<---	OutOfClass.1	-.151	-.073	.090	.093
Int2inv.1	<---	PubPriv	-.072	-.053	.055	.190
EI.1	<---	PubPriv	.096	.031	.122	.431
Int2inv.1	<---	PBC.1	.366	.544	.043	***
EI.1	<---	PBC.1	.632	.418	.095	***
Int2inv.1	<---	ATA.1	.065	.128	.031	.037
EI.1	<---	ATA.1	.417	.367	.069	***
EI.1	<---	Entre_kin	-.011	-.003	.125	.932
Int2inv.1	<---	Entre_kin	-.004	-.003	.056	.941
Int2inv.1	<---	OutOfClass.0	.024	.023	.048	.609
EI.1	<---	OutOfClass.0	-.137	-.058	.103	.183
Int2inv.1	<---	FacInf.0	-.003	-.003	.040	.948
EI.1	<---	FacInf.0	.004	.002	.089	.968
Int2inv.1	<---	PBC.0	-.074	-.100	.048	.124
EI.1	<---	PBC.0	-.052	-.031	.103	.614
Int2inv.1	<---	ATA.0	.053	.091	.035	.134
EI.1	<---	ATA.0	.028	.021	.084	.743
Int2inv.1	<---	Int2inv.0	-.034	-.027	.061	.578
EI.1	<---	EI.0	-.005	-.004	.059	.939

A. In model 2, Controls were all the T1 values (pre-values) + Age, gender and entrepreneurial kin
B. Just like model 1 faculty still does not directly affect intentions (innovative and just entrepreneurial) but only indirectly through ATA and PBC.
C. Just like model 1 out of class affect intent to innovate but not EI. If we take the sig at 90% confidence level, then we can say there is a negative relationship with EI

D. Just like Model 1 faculty and out of class experience affect ATA and PBC
E. The difference is that Public Priv. Does not affect ATA PBC EI or Int2inv.
F. Another difference is that ATA now predicts both intent to innovate and entrepreneurial intention because we control for T1 values. This is a good thing because it demonstrates that Theory of planned behavior also support mayhew's construct for intention to innovate.
G. This method is consistent with the paper published in AMLE.

MODEL 3


e1
ATA_diff
e2
Int2inv_diff
e3
PubPriv
EI_diff
e4
PBC_diff
FacInf.1
Age
Gender
Entre_kin
OutOfClass.0
OutOfClass.1
FacInf.0

Model 3 Regression Weights: (Group number 1 - Default model) use diff values and controlled for out of class and faculty pre-values

			Unstandardized Estimate	Standardized Estimates	S.E.	P
ATA_diff	<---	PubPriv	.519	.144	.177	.003
PBC_diff	<---	PubPriv	.324	.122	.138	.019
PBC_diff	<---	Age	.002	.003	.024	.933
PBC_diff	<---	Gender	-.042	-.016	.087	.631
PBC_diff	<---	FacInf.1	.462	.265	.093	***
ATA_diff	<---	FacInf.1	.274	.116	.127	.031
PBC_diff	<---	OutOfClass.1	.160	.089	.096	.094
ATA_diff	<---	OutOfClass.1	.472	.195	.131	***
PBC_diff	<---	FacInf.0	-.354	-.188	.096	***
ATA_diff	<---	FacInf.0	-.192	-.076	.132	.145
ATA_diff	<---	OutOfClass.0	-.660	-.238	.144	***
PBC_diff	<---	OutOfClass.0	-.306	-.149	.105	.004
Int2inv_diff	<---	PubPriv	-.078	-.045	.070	.264
EI_diff	<---	PubPriv	-.013	-.003	.157	.933
Int2inv_diff	<---	ATA_diff	.047	.098	.029	.105
Int2inv_diff	<---	PBC_diff	.354	.546	.040	***
EI_diff	<---	ATA_diff	.483	.422	.065	***
EI_diff	<---	PBC_diff	.558	.361	.088	***
EI_diff	<---	Entre_kin	.122	.029	.161	.449
Int2inv_diff	<---	Entre_kin	.001	.001	.072	.989
Int2inv_diff	<---	OutOfClass.1	.191	.164	.051	***
Int2inv_diff	<---	FacInf.1	-.072	-.064	.051	.160
Int2inv_diff	<---	OutOfClass.0	-.145	-.109	.054	.007
Int2inv_diff	<---	FacInf.0	-.014	-.011	.049	.777
EI_diff	<---	FacInf.1	-.015	-.005	.115	.898
EI_diff	<---	OutOfClass.1	-.107	-.039	.116	.354

In the model 3, the controls where Age, Gender, Entrepreneurial kin and the T1 values for out of class experiences and faculty influences. I took the difference between T2-T1 for the dependent variables (ATA, PBC, EI and Intent to Innovate)

Just as in Model 1, faculty did no affect EI and intent to innovate directly

Just like Model 1, PubPriv variable did not have any direct impact on people's intentions. In other words there is no evidence that people in private university has higher innovative intent or even entrepreneurial intent after taking compulsory EE

Just like model 1 privpub variable affect ATA and PBC. In other words, people in Private University had greater increase in ATA and PBC after EI

Just like Model 1 PBC affects EI and Intent to innovate. ATA affects EI BUT NOT intent to innovate.

The only difference between this and Model 1 is that out of Class does not affect PBC because we controlled for T1 values of out of class experience

General Commentary on all Three Models

			Model 1	Model 2	Model 3
ATA_diff	<---	PubPriv	Yes	No	Yes
PBC_diff	<---	PubPriv	Yes	No	Yes
PBC_diff	<---	OutOfClass_diff	Yes	Yes	No
ATA_diff	<---	OutOfClass_diff	Yes	Yes	Yes
ATA_diff	<---	FacInf_diff	Yes	Yes	Yes
PBC_diff	<---	FacInf_diff	Yes	Yes	Yes
Int2inv_diff	<---	PubPriv	No	No	No
EI_diff	<---	PubPriv	No	No	No
Int2inv_diff	<---	ATA_diff	No	Yes	No
Int2inv_diff	<---	PBC_diff	Yes	Yes	Yes
EI_diff	<---	ATA_diff	Yes	Yes	Yes
EI_diff	<---	PBC_diff	Yes	Yes	Yes
Int2inv_diff	<---	OutOfClass_diff	Yes	Yes	Yes
EI_diff	<---	OutOfClass_diff	No	No	No
EI_diff	<---	FacInf_diff	No	No	No
Int2inv_diff	<---	FacInf_diff	No	No	No

The table above compares all three models. It reveals that out of classroom experiences does not affect entrepreneurial intent (strangely)

They all reveal that privpub variable does not affect the intentions from compulsory EE

They all reveal that faculty does not affect intentions (EI and intent to innovate) and that out of class experience does not affect EI

However, while model 1 and 3 show that Privpub variable affects changes in ATA and PBC, model 2 shows that Comp EE does not affect higher ATA or PBC (and is confirmed by an independent sample t-test which shows that at T2 there are no significant difference between the private and public universities)

One reason for this difference may be the initial state of mind of student in both universities. Public university students had higher score for ATA PBC EI and Int2inv at T1. This difference vanished at T2. Which means that the intentions and ATA and PBC of public students did not increase as much as students form public university. So When we took the difference the public private variable picked up the degree of change. But when we control for the pre-values we see that the post value are not affect.

The deduction therefore is that private uni does not have higher intentions and its antecedents than public schools after Compulsory EE. But given that public University had higher start scores, we can conclude that Compulsory EE had stronger impact on private university students.

Model 2 also shows that ATA predicts intent to innovate

Over all notes on suitability for this paper:

Model 2 was used in GIELNIK et al. 2015 who also used SEM.

Model 1 is ok too. Souitaris et al 2007 and Rauch 2015 used difference scores. Although their method was ANOVA and ANCOVA respectively. Model 3 is largely like 1.

A.5 RESULTS FOR SEM USING DATA WITH COMMON LATENT FACTOR

Results of SEM when CLF is added to the data

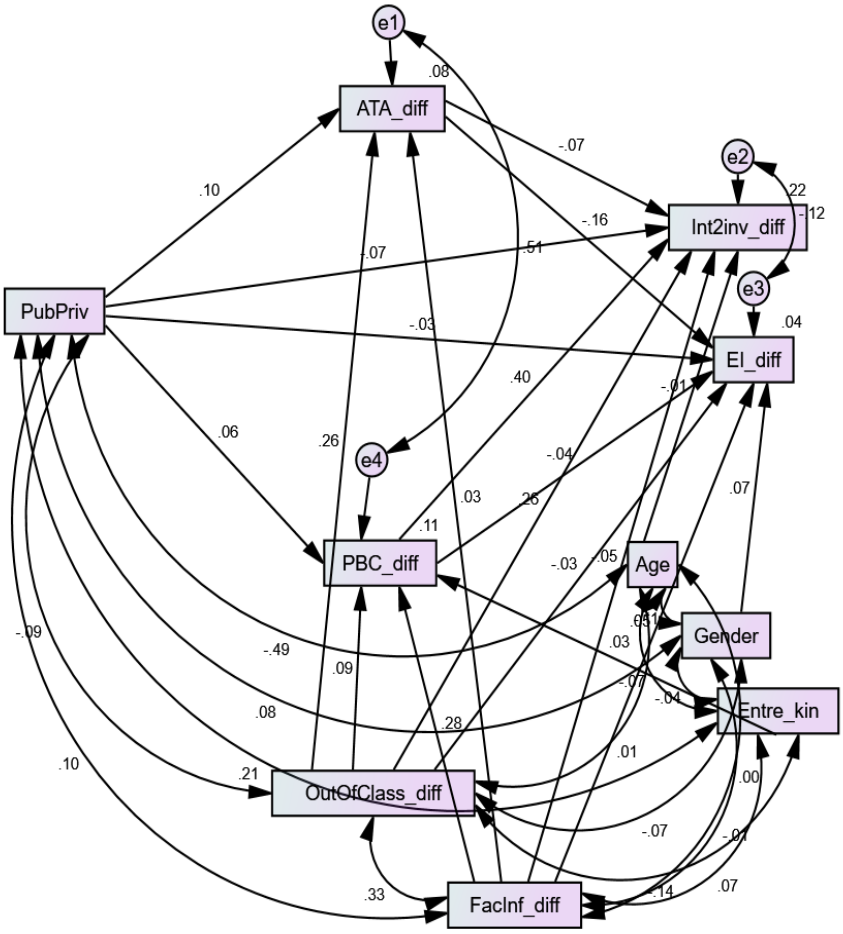
	Hypothesis	Standardized Estimate with CLF	p	Standardized Estimate WITHOUT CLF	p
H1a	The change in ATA is positively related to change in Int2Inv	-.07	ns	.10	ns
H1b	The change in ATA is positively related to a change in EI	-.16	**	.41	***
H1c	The change in PBC is positively related to the change in Int2Inv	.40	***	.54	***
H1d	The change in PBC is positively related to the change in EI	-.04	ns	.36	***
H2a	Out of Class experiences have positive effect on the change in ATA	.26	***	.30	***
H2b	Out of Class experiences have positive effect on the change in PBC	.09	ns	.17	***
H2c	Out of Class experiences have positive effect on the change in Int2Inv	.26	***	.19	***
H2d	Out of Class experiences have positive effect on the change in EI	-.03	ns	-.02	ns
H2e	Engaged Faculty Influences have positive effect on the change in ATA	.03	ns	.13	*
H2f	Engaged Faculty Influences have positive effect on the change in PBC	.28	***	.31	***
H2g	Engaged Faculty Influences have positive effect on the change in Int2Inv	-.05	ns	-.03	ns
H2h	Engaged Faculty Influences have positive effect on the change in EI	.05	ns	.00	ns
H3a	Students in Private Universities will have greater increase in ATA after compulsory entrepreneurship education than students in Public universities.	.10	*	.15	**
H3b	Students in Private Universities will have greater increase in PBC after compulsory entrepreneurship education than students in Public universities.	.06	ns	.12	*
H3c	Students in Private Universities will have greater increase in Int2Inv after compulsory entrepreneurship education than students in Public universities.	-.07	ns	-.06	ns
H3d	Students in Private Universities will have greater increase EI after compulsory entrepreneurship education than students in Public universities.	-.03	ns	0	ns

EI = Entrepreneurial Intention; Int2Inv = Intention to Innovate; ATA = Attitude towards the act of entrepreneurship; PBC = Perceived Behavioral Control; ns = Not Supported; CLF Common Latent Factor

* = $p < .05$; ** = $p < .01$; ***=$p < .001$

Model Fit: CFI = 1.00; RMSEA = .00; PClose = .964; Chi-square = 6.495 *df* = 9

CONCLUSION: CLF was to strict on the data


e1
.08
ATA_diff
-.07
e2
.22
.12
.10
-.16
Int2inv_diff
-.07
.51
e3
PubPriv
-.03
.04
EI_diff
.40
-.01
.06
.26
e4
-.04
.03
.26
.07
.11
PBC_diff
-.03
.05
Age
-.09
.03
Gender
-.49
.09
-.07
-.04
.08
.28
Entre_kin
.01
.10
.21
OutOfClass_diff
.00
-.07
-.01
.33
FacInf_diff
-.14
.07